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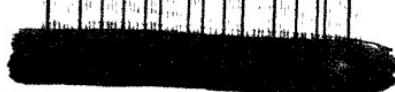
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TEACHING THE COMMON BRANCHES

*A Textbook for Teachers of
Rural and Graded Schools*

BY

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Revised and Enlarged Edition



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PREFACE TO THE REVISED AND ENLARGED EDITION, 1924

DURING the eleven years since *Teaching the Common Branches* was written, the advance in the technique of teaching has surpassed that of any previous half-century. This was demonstrated to the author's complete satisfaction when he gathered the material together in preparation for the present revision. Heretofore, writers have presented new points of view or a new system of principles. But during the past decade an army of investigators has been working upon the details of instruction with such efficiency that we are beginning to approach a science of teaching. Method is being applied to the field.

Some school subjects have been studied more extensively than others. Notable among these are spelling, penmanship, silent reading, the social sciences, and health education. In this period, too, the functional point of view has developed into the problem and project approach on the one hand and into diagnosis of difficulties as a basis for teaching on the other. The development of standardized educational tests in several of the fields is an additional product of these fruitful years.

Just as in writing the first edition the author felt that he had a right to attempt to perform the service of making available for the beginning teacher the functional point of view, which was just then being applied to teaching, so now he is interested in presenting to the same audience the advances that have been made in the past decade in developing the details of that point of view. But with one important difference — from the standpoint of materials the literature has grown so voluminous that selection has been difficult to

the point where he has had to rely upon citations to supplementary references for a complete presentation of the methods in each field.

This new edition is therefore more than a revision. The book has been entirely rewritten, and new plates have been made. It is hoped that in its new form it will continue to be a source of help to the teachers and students of education. If this proves to be the case, the author will feel amply rewarded for his labor in rewriting the book.

Acknowledgment of assistance is gratefully made to a number of recognized authorities in the special fields who coöperated in the revision by providing, or checking, in each field the literature which described the present status of investigations. Specific acknowledgment is made to Miss I. B. Whitley, who took all the dictation, transcribed the notes, and helped to edit the manuscript.

W. W. C.

PREFACE TO THE REVISED EDITION 1917

SINCE the publication of *Teaching the Common Branches*, in 1913, an unusual amount of material has become available through the labors of many investigators. This is particularly true of the field of the curriculum in which a definite and substantial advance has been made. It is also true in a less degree of the field of methods of presentation.

To gather this material from scientific monographs and textbooks in education and make it immediately available for the use of the teacher who does not know where to find it or who, through lack of technical terminology, cannot interpret it in its scientific form, the present revision of the text has been undertaken.

PREFACE TO THE FIRST EDITION

THIS book represents an attempt to write a simple text on the theory of teaching for students of teaching and for inexperienced teachers, particularly in the rural schools.

Most of the would-be teachers who take an elementary course in methods of teaching are destined to begin in country schools. But most of the methods found in books on teaching have been worked out for graded schools, where there is more time, and where there are, on the whole, better teachers. The author has faced this problem by writing the present text primarily for rural teachers. The most practical assistance to him in the task has been several years' experience of his own as a country school teacher, several years more spent in training country teachers in a County Model School, and, very recently, some experience in teaching pedagogy to a group of young students in the University High School. This equipment has been supplemented by an examination of all the books used in the high-school normal training classes of those states that have them, and by submitting the manuscript to certain experts who know country schools and the capacities of their teachers.

In planning the textbook, three courses were open. First, the principles of teaching might be discussed with copious illustrations from the several subjects. This, however, would give a disjointed view of each subject. Or, the abstract principles might be stated briefly in the first four or five chapters and applied in detail to the different subjects in later chapters. Or — and this was the method finally selected by the author — the subjects might be treated separately, each explained and illustrated, and a general statement of these given in the last four chapters of the text.

The reasons for adopting this plan are two. In the first place, it provides for an inductive treatment of the principles of teaching. After the student has seen how to secure interest in spelling, writing, arithmetic, reading, etc., he is able to understand the abstract statement of how to do it in all subjects; he can make his own generalizations and apply them. But, in the second place, many people do not know how to apply principles, and seemingly can never learn. This type of mind seems to handle a new situation by reference to a principle stated abstractly but by reference to another concrete case. For such, the last four chapters are of little use. Such teachers will use only the special methods. Hence, these methods should be treated fully.

The number of pages devoted to each subject is no indication of relative importance, for much space is taken in the earlier chapters to explain technical terms and illustrate general principles.

The order of subjects in the first fourteen chapters was determined according to the teaching process most clearly exemplified therein. Spelling was selected as the first because it is essentially a drill subject, and hence easy to demonstrate to beginners. In this subject, drill is emphasized. In reading, appreciation is emphasized; in drawing, an easy correlation with other subjects; in music, the parallel with written composition; in geography, the use of the imagination; in arithmetic, the developing method; and in civics, a psychological organization based upon practical problems. Developed in detail in one subject, the principles are then applied in the subjects following.

Each subject has been approached from the functional point of view.

The references for class reading are not exhaustive; only those books that seem sufficiently simple for inexperienced teachers have been cited.

While special attention is paid to those modifications that are necessary because of the lack of time in rural schools, yet the author believes that the text will be of value to all teachers, whether in rural or graded schools.

Acknowledgment of assistance in criticizing the manuscript is made to State Superintendent W. D. Ross of Kansas, formerly Inspector of Teacher Training Courses in the Kansas high schools; to State Superintendent W. P. Evans of Missouri; to S. E. Davis, Inspector of Teacher Training Courses in the high schools of Missouri; to G. W. Reavis, Rural School Inspector for the State of Missouri; to R. H. Emberson, Professor of Rural Education in the University of Missouri; to R. M. Dewey, of the University of Missouri; and to my wife, Jessie Allen Charters.

W. W. C.

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TEACHING THE COMMON BRANCHES

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CHAPTER I

SPELLING

1. Subject-Matter

WE shall begin our studies of teaching with a description of spelling. In all the studies that are to follow we must remember that for the most part we are concerned with beginning teachers and with country schools where there is much haste and worry. Because of this, the methods that we suggest must be simple and direct and such as will take the least time possible to carry out effectively.

Function. The first question that we shall ask of every subject is: What is its use, purpose, or function? for every subject has a different use or function. History is used to tell us what was done in the past; penmanship tells us how to make letters according to the different forms and with definite standards. Botany furnishes information about plants, zoölogy about animals; music instructs in the ways of producing sounds which go together to make pleasing combinations. Every subject has a function of its own which is entirely different from that of every other subject.

Spelling is not peculiar in this respect. When we ask spelling to state why it exists, it might, had it the power of speech, answer as follows: "My function is to see that letters have the correct order in words." "But," we

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remonstrate, "writing has the same function, has it not?" Spelling replies, "No; all that writing has to do is to see that the letters are made properly. It does not care about the order of the letters. A word might be beautifully written according to the standards of writing, but be quite incorrect when judged by the standards of spelling."

If this correct order were not maintained what would be the result? This question is answered in different ways at different times. If we do not spell correctly, some say, people will think that we are not educated and will make fun of us. A sign over a business college in Chicago was ridiculed by the local newspapers because it read as follows: "Spelling, Arithmetic, and Writing Taught Here." Again, we may be applying for a position, and the presence of a misspelled word may injure our chances of getting it. Such a case once occurred when a college graduate wrote at the conclusion of his application: "Yours respectively, John Smith." Needless to say he was not seriously considered.

These are, however, inadequate reasons for learning to spell correctly. The real reason for learning to spell is to make sure that we may be understood. In spelling we place the letters in certain order so that people will know exactly what we mean. A man wrote to an acquaintance to buy him a "heavey" horse for farm work. He was very angry with the horse dealer for bringing him a heavey horse and was convinced of his mistake only when he saw that he had written "heavey" for "heavy." He had thereby lost \$100. An automobile dealer received the following letter from a correspondent:

Dear Sire: Because you send me A Paid Envellope I SEnd you an answer I Have No Recolection of Applying to you to Purchase an Automobile I Am 82 years Old and very nervous Could Not

possibly use one and would not accept one if you would Give it to me Would Not undertake to Operate One No how Have No no money only a Little Pension money I draw as a Wounded Soldier was badly wounded on the Yazoo river in 1863 could not Operate Car no-how Rid in one only with great reluctance Please excuse me from wanting such a charge to worry out my life Farewell.

Here we are inclined to think of the writer as an object for ridicule and we have difficulty, moreover, in knowing exactly what he means. We can surmise what he is trying to say, but he is in a dangerous position because he has to trust to the reader's good humor and intuition. Every time anybody misspells a word he has to depend upon the mercy of the one who reads it. He has no *right* to be understood. Inaccurate spelling means faulty communication and sometimes this inaccuracy is very expensive.

Summary. The function of spelling is to enable us to determine accurately the order of letters in words in order that we may communicate values in writing. The penalty for poor spelling is the likelihood of being misunderstood and, furthermore, of losing the respect of the reader.

Qualities and Ideals. In everything that we do we have to maintain certain standards if the work is to be well done and in spelling there are three which are of first importance. Spelling must be *accurate*. This is its outstanding characteristic, but in addition to accuracy, it is quite important that it should be performed with *speed*. Nobody likes to spell slowly or look up words of which he is not sure. It is very much better to be able to spell the word without thinking and still have it correct. But since few of us are absolutely accurate and have always the speed necessary to dash the word off without thinking, a third quality is necessary — and that is the quality of *sensitiveness to mistakes*. Many children and adults spell incorrectly because they do not know when a

word is wrong. So far as they are concerned it seems to be quite correct.

These qualities become ideals when the person tries to attain them. We may, therefore, say that if spelling is to be well learned, the children should feel strongly the value of the three ideals — accuracy, speed, and sensitiveness to mistakes. It is one thing for the teacher to possess these ideals for teaching spelling but it is quite another matter to have the children, on their own parts, want to possess them. The methods of intensifying the desire of the children for accuracy, speed, and sensitiveness, are employed throughout the discussion in the remainder of the chapter. The methods that are suggested for teaching the subject take into account the fact that speed, accuracy, and sensitiveness to mistakes are being considered.

The Teacher's Objectives. Based upon the foregoing statements we may say that the teacher has three chief objectives in mind in teaching spelling, meaning by objectives aims, intentions, or purposes. (1) He will seek to get the children to like spelling. They must have an aggressive interest in it because people learn very little when they lack interest. They do not throw themselves into it with all their power. They hang back. (2) The teacher will try to develop accurate, speedy, and sensitive spelling. He will not accept inaccuracies, misspelled words, without protest, but will work to have the children spell automatically and try to make them sensitive to mistakes. (3) The teacher will not be satisfied with good spelling in the spelling class and poor spelling in geography and history papers. He will judge of his success in teaching by the absence of misspelled words in letters and themes. This, of course, is a very much harder task for him than to judge spelling upon the merit of the spelling papers, but clearly there is no use in learning to spell

accurately if we do not always use the knowledge when we write.

A little friend of mine was said to be the best speller in the county. His reputation was based upon the fact that he had spelled everybody down in the county spelling match. He wrote to me telling me the good news and in the letter he said, "I was nervus for a wile," so after all he was not a good speller, for one may lay claim to that distinction only when he has no errors in his written work. The ability to spell orally is of little value to us since, in speaking, we do not have to spell. We need to spell only when we write, and by our writing our spelling is judged.

Summary. It is the business of the teacher to develop three ideals. He must develop in the children a liking for spelling; he must intensify the ideals of accuracy, speed, and sensitiveness to mistakes, and he must judge of the success of his pupils by their ability to spell words accurately in their written work.

The Course of Study. There are several hundred thousand words in the English language. So many, in fact, that we cannot expect children to spell all of them. So the important question arises — what words shall be studied in school? These words, when selected, form what we call a course of study in spelling.

There are three sources from which to draw the spelling lists. The first of these is the speller, about which we shall have more to say in a few pages. But it always happens that the teacher feels the necessity of supplementing the spelling list by words drawn from the books that children use in studying reading, history, or geography. The pupils are constantly, in these and other subjects, meeting words that they have not met before, and if we wish to increase their vocabularies it is necessary for us to make them acquainted with the words by pronouncing them,

by a discussion of the meaning, and sometimes by spelling. The objection to selecting such words is that it takes a good deal of time; but I found by experience in my rural school that the amount of time need not be very great. I used, for instance, to mark six to ten words in less than a minute by having the pupils, while I named line and word, put a pencil dot under each of the words that I wished them to learn to spell.

The third source from which to draw spelling words is the actual misspelled words of the children. Their papers are gone over and the words most frequently missed are selected for spelling. Indeed, it is quite clear in my mind that the words which each child misspells in his written work are the words upon which the greatest amount of time should be put in spelling. They are even more important than the words in the spelling book. We are sure, then, that they are words which he is going to use in writing because he has used them, and words with which he has difficulty.

There are some who think that the child should be able to spell every word that he reads, but this is not true. If we read, we do not need to be able to spell, we need only to recognize the word, and if we never write the word it is not of great importance that we be able to spell it. Recognizing words is just like recognizing people. I can easily recognize a friend without being able to tell the color of his eyes, and so on. But if I wish to paint a picture of him I must know all these details. So, the reader merely recognizes, but the speller is like the painter — he must know the detailed order of the letters; he does not need to know this order if he does not write.

Summary. Spelling lists may be made up (1) from the spelling books, (2) from words actually used in reading matter in each subject, (3) from the actual errors of pupils made in their written work.

The Spelling Book. The old-fashioned spelling book was filled with words which in many cases seemed to be selected at random, with a tendency on the part of the authors to pick difficult and unusual words. The basis of selection was very poor and differed for each book. Recently, however, within the past ten years, a very large amount of work has been done by investigators in finding out exactly what words children and adults use when they write, and upon the foundation of this work some of the newer textbooks are built. These investigators are asking two questions: (1) What words are used most commonly in the writing of children and adults? (2) How difficult is each word? Rather complete answers to these questions have been found and textbooks are now being based upon the lists and studies which these men have made.

When spellers are properly constructed it is perfectly clear that they are very useful. They present the common words which every child should know. The words are printed and can therefore be quickly assigned, which saves much time. Since it is necessary to have spelling drills the spelling book is useful, as the children cannot be expected to pick up the spelling of words without close attention to them.

Frequency of Use. You may be interested in knowing something about the studies that have been made to discover what words are most frequently used by children and adults in their writing. Jones, for instance, read fifteen million words in the themes of 1050 children, tabulated them, found how often each one occurred, and from these fifteen million words he selected 4532 which were most frequent by the standards that he set up. Other studies have been made of the themes of children and several have been made of the written material of adults. In all these cases we are told which are the most common

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words, and these studies are available for the use of those who make the textbooks and for teachers as well. The best known of these lists is the thousand most common words collected by Ayres and found in the Ayres Spelling Scale, which can be obtained through your superintendent from the Russell Sage Foundation. A copy of it is also found in Rapeer's *Teaching Elementary School Subjects* which is listed in the references for class reading at the end of the chapter.

Frequency of Difficulty. The list to which we have just referred indicates the words most frequently used by children and adults in writing. In addition to this, however, the scholars have studied which are the most difficult words. This sort of study is, of course, very important, because we naturally wish to spend most of the time allotted to teaching spelling upon the hard words, since the children can already spell the easy ones.

You will be interested to know that the word which Jones found to be most frequently misspelled was not "asafœtida" or "parallelogram," but "which." The next most commonly misspelled were "there" and "their," and "separate" had fourth place on the roll of dishonor. The one hundred words which he found to be most commonly misspelled were the following, which he calls the "100 Spelling Demons of the English Language." The order is not significant after the first four words.

which	can't	guess	they
their	sure	says	half
there	loose	having	break
separate	lose	just	buy
don't	Wednesday	doctor	again
meant	country	whether	very
business	February	believe	none
many	know	knew	week
friend	could	laid	often
some	seems	tear	whole

been	Tuesday	choose	won't
since	wear	tired	cough
used	answer	grammar	piece
always	two	minute	raise
where	too	any	ache
women	ready	much	read
done	forty	beginning	said
hear	hour	blue	hoarse
here	trouble	though	shoes
write	among	coming	to-night
writing	busy	early	wrote
heard	built	instead	enough
does	color	easy	truly
once	making	through	sugar
would	dear	every	straight

Not only have the scholars been able to find out what are the most difficult words but they have shown us how much more difficult one word is than another. One method of doing this you can try out in your own class, by using the following table, taken from Tidymann's *Teaching of Spelling*. By this table we can see that the word which is missed by from one hundred to ninety-seven per cent of the pupils in the class has, for the third grade, a difficulty of *ten*, while if it is missed by from one to four per cent

**RATIOS OF WORD DIFFICULTY BASED UPON PERCENTAGES
OF INCORRECT SPELLING**

PER CENT INCORRECT	RATIOS					
	III	IV	V	VI	VII	VIII
100-97	10	10	10	10	10	10
96-89	9	9	9	9	9	9
88-73	8	8	8	8	9	9
72-51	7	7	7	8	8	8
50-29	6	6	7	7	7	7
28-13	5	5	6	6	6	7
12-5	4	4	5	5	6	6
4-1	2	4	4	5	5	5

of the class it has a difficulty of *two*. Consequently, the first word is five times as difficult as the second. This is very important because, if we ask the children to write the second word ten times we ought to ask them to write the first word fifty times. It may be said parenthetically that the teacher should make use of this table as a kind of rough rule in deciding how much time and effort to put upon words.

Specific Difficulties. In studying spelling it is not only necessary to discover the words which are most frequently missed by pupils in general as found in such a list as the "spelling demons." It is still more important that we should know the specific spelling difficulties of the class which we are teaching and, in addition, the peculiar difficulties of each child. If the teacher knows what are the mistakes common to the class he can spend more time upon them. If, further, he knows what mistakes are most commonly made by each child, he is able to give individual instruction to each. It is a matter of common observation that each child has his own pet difficulties.

It is for this reason that the children should have the spelling lesson dictated to them before they study it. When this is done the teacher can see which words the pupil is already able to spell and therefore does not need to study, and those upon which he must spend his time.

Graded Lists. You may be interested in having me carry the matter further and showing how the authors decide what words shall be taught in each grade in the spelling book. In general, we place in each grade those words which the children most commonly use in that grade. Jones picked out the words which appear for the first time in each grade in the themes which he studied. Those which were used by two per cent of the pupils in that grade were put in his list. But it is found that some of these words

are very difficult to spell and so it has been decided to select the easier words for the lower grades and run them up in increasing difficulty to the advanced grades. In general, the shorter words are placed in the lower grades. This is done in the newer spelling books which are scientifically constructed.

Length of Lesson. It is not advisable to have the spelling lesson longer than fifteen minutes, and ten minutes is quite satisfactory where spelling is taught every day. There is some difference of opinion as to the number of words that can be best taught in one lesson. The general tendency, however, is toward a shorter list. Probably four to six words, common words which the children understand, are about right. Horn, however, advocates the giving of a list of twenty-five words on Monday which the children will clean up during the week. His plan is to dictate all of these words on Monday before the children have studied them so that they and the teacher can see the words to which special attention must be paid during the five days.

Summary. In general, the course of study in spelling should be based upon the words most commonly used by the children in writing, and attention must be paid to the words with which they have the greatest difficulty. Class instruction is based upon the words most frequently misspelled in the class and individual instruction is based upon the difficulties of each child. The words in the spellers should be graded upon the basis of use and difficulty. No lesson should be more than fifteen minutes long, and from four to six words may be taught in each lesson.

2. Interest in Spelling

Interesting the Children. One of the most difficult things about the teaching of spelling is to keep the children interested in the subject. For most children it is very dry, but it must be admitted that some children enjoy it deeply. Particularly is it not interesting to those children who have difficulty with it. To them it is very exasperating to have

to decide whether the word is *precede* or *preceed* when their memory is not very distinct in the matter and when there is no reason, so far as they can see, why it should be one rather than the other.

Motive. One of our major problems, then, is to get the pupils interested in spelling or to so adjust conditions that they will have a motive. To say that one is interested in a subject is another way of saying that he has a motive for the study. One may, however, have other motives than that of interest. For instance, one may work for a thing, not because he is interested but because he needs it, or because he is envious of people who have it or avaricious. So we may be understood as meaning motive in its best sense, and when we speak of getting children interested we mean about the same as giving them a motive.

Immediate Interest. Fortunately for some pupils they like spelling for its own sake. When you ask them why they like spelling the answer is the so-called feminine one, "Just because." Pupils may love a subject because of the infectious enthusiasm of the teacher who is himself fond of it, or they may be naturally attracted to it. When a subject is loved for its own sake it is said to be of "immediate" interest, and when this point has been reached the goal is attained. So now let us take up a far more difficult question.

Mediate Interest. What is the teacher to do when the children are not interested in spelling? That is to say, if there is no immediate interest in the subject how can interest be put into it? Using a more technical term we may ask, "How can *mediate* interest be aroused?" If we are looking for a rule the answer to this is very simple, though it is reasonably hard to apply the principle. The abstract statement is given very well by James as follows: "Any object not interesting in itself may become interesting through

becoming associated with an object in which an interest already exists."

This gives us a very simple plan for getting mediate interest in spelling. If the children are not interested in spelling then we must find something in which they *are* immediately interested and associate spelling with it. Nothing could be easier to state. Our real trouble begins when we try to find those things in which the children are already interested and with which spelling can be connected.

Nevertheless the task is not at all impossible and there are two groups of method quite different in spirit which are used in motivating spelling, and, for that matter, practically every other subject in the course of study.

Appeal to Generic Values. We have a long list of interests of children which can be appealed to in any subject because they are common to all effort. They are called "generic values" or "generic interests." Immediately we think of the making of grades as one of these. If the child wishes for any reason to make high grades, he will take an interest in spelling if he sees that his grade is low. Belonging to this same class are such interests as avoiding punishment, avoiding scoldings and reprimands, getting the good will of the teacher and his parents, and getting ahead of other people through a spirit of rivalry. These are examples of the generic interests to which teachers quite commonly appeal.

One of the chief difficulties about using this method is to find things that are of immediate interest to individual children. For instance, a teacher might use shame, thinking that the avoidance of shame was of immediate interest, but the pupil might not study any better because he, personally, did not mind the sarcasm of the teacher. We might think that the twelve-year-old boy would be shamed

by staying in after school, by sitting with the girls, or by being suspended, but unless these *are* things for which he cares they will furnish no motive for him to study anything in which he is not interested.

Summary. In getting mediate interest in spelling one method is to make an appeal to certain generic values which are of immediate interest.

Appeal to Specific Need. The foregoing type of interest is always at hand for the teacher to use wisely if he desires to do so, but since it applies to all subjects we are justified in asking ourselves the question, "Are there any special incentives that apply to spelling alone?"

The answer to this is quite clear. Spelling has an intrinsic function, which is that of helping us to communicate our ideas accurately through following a proper letter order in words. We use spelling to communicate ideas accurately. If, then, we fail to communicate ideas accurately because we spell inaccurately we have a specific need for learning to spell correctly.

If children are really interested in what they write they will be sorry to be misunderstood because of poor spelling. Of this the case of the "heavey" horse mentioned before is an illustration. I venture to say that the man who wrote the letter had a strong motive for, and felt a keen interest in, spelling every time he wrote a letter for a long time afterward. Such incidents the teacher should collect and keep for purposes of inspiration and for the reinforcement of the desire to spell correctly.

This is the natural source back to which we go for getting a specific interest in spelling. If we can develop in children a love for writing and for being accurate and speedy in their spelling so as to write with greater efficiency, we are using the most intelligent method of developing a strong motive for the study of the subject. Clearly, however, if

the child is not interested in writing well, he will not be greatly concerned about whether or not he spells well. Methods for getting children to like composition will be discussed in the proper chapter.

We may use this method to intensify an interest in spelling by getting the children to study their own difficulties. It is quite one thing to give them a list of words to spell and quite another to get them to realize that with some of these words they have more difficulty than with others. The generic desires to finish a job well begun, to conquer stubborn difficulties, and to see improvement supplement the specific need for spelling.

Summary. Another method of getting interest is to find out the specific use of spelling and help the children to realize and correct their difficulties.

A High Degree of Skill. It is a matter of common observation that people seldom like things which they are unable to do well without trying hard for a long time. What usually happens is that we get enough interested in something to start at it, but if we fail to show sufficient improvement to satisfy us the interest wanes. On the other hand there are many things that we do so well that we lose interest in them. But in between the very difficult things in which we have no interest and the very easy things in which we have lost interest there lies a group of things which are neither too easy nor too hard. So, in spelling (as in other subjects taught in school) it has been discovered that as children become more skillful in the subject their interest increases. Consequently one way of developing interest is to teach the subject so well that proficiency is developed. Particularly useful is praise in this connection. Children sometimes do not know that they are excellent spellers or that they are improving. Their attention may be centered upon their mistakes, with the

result that they become discouraged. The generous use of praise when effort is being put forth is absolutely essential in handling boys and girls who are trying hard to do their reasonable best.

Making Difficulties Individual. Children also develop interest in something which is their very own, because ownership is one of the deepest of human instincts. It may seem comical to say that children can be made interested in spelling by having them own some difficulties, and yet it is demonstrably true. A boy who had no interest in spelling actually developed considerable interest in it when he began to keep a list of the words with which *he* had particular difficulty. He was rather proud of the ownership of his "demons" and grew to love them so much that he talked about them and, interestingly enough, worked hard upon them to conquer them. He felt that his troubles were more serious than those of other pupils. He boasted that his seatmate missed the easy ones but that the words that he missed were such that only a bright youngster could handle them. Whatever may be the emotions that accompany the ownership of difficulties, it is nevertheless true that children's interest in spelling is greatly intensified when they study it as their own particular problem and feel that they are not wasting time on words which they can already spell.

Summary. To supplement the appeal to specific need, use should be made of the fact that up to a certain point increase of proficiency causes increase of interest, and of the further fact that pupils are most interested when they see that they are working upon their own individual problems.

The Project Method. So much current attention is being paid to what is known as the "project method" of teaching that its relationship to the methods developed in this text should be shown.

As I understand the project, it has two characteristics. In the first place, in a project the child does a great deal of thinking in the effort to solve some large problem, and in the second place each problem is so staged that it can be worked out under natural conditions which have not been affected by the school. In studying agriculture by the project method we think immediately of a garden project. In this project the boy actually raises a garden at home on his father's farm, under the conditions that prevail there. He prepares the soil, selects the seed, plants it, and does everything else that is necessary in order to grow vegetables, as intelligently as he can. During the whole process a great deal of thinking and studying is required, and while he is attending to his garden he studies in school all the facts that he can find about how to do his work well.

In this illustration we have both characteristics. The work is done in its natural setting and it is carried on as a large problem on which the student has to do a very great deal of thinking.

When we apply ourselves to spelling and try to think of some large problems that the boy faces in connection with spelling, we immediately run upon the correction of his difficulties. We can make methods of learning spelling a project. If we say to him, "What can you do to learn to spell better?" and he answers, "I ought to study more intelligently," it is a project. He really has to study how to study well and we can help him in the following way: (1) We can help him to analyze his difficulties. This means that he will become aware of the words that cause him the greatest trouble and the words which he spells well. (2) We can help him to learn how to improve his spelling, as will be shown later in the chapter. (3) We can help him to measure his progress by having him keep track of his spelling errors and by giving him tests.

When he takes the methods of improving his spelling as a problem, he has a real project which may prove very interesting to him and which will use all the intelligence of which he is possessed.

The project method applied in this way has very great superiority over the usual procedure. Ordinarily, we assign a spelling lesson and direct the children to spell each word correctly. If the spelling lesson consists of ten words they have ten little tasks to perform and they do them rather automatically. But as soon as we set before the pupil the project of making himself into an excellent speller and invite his coöperation and assistance, we may call forth a great amount of intelligent effort which would otherwise lie dormant. By the old method of assigning words to spell the teacher takes all the responsibility. By the new method of putting up to the pupil the problem of studying his own difficulties, the responsibility is shifted, in a sense, from the shoulders of the teacher to those of the pupils.

It may be said parenthetically that spelling is frequently used in connection with other projects. For instance, the boy with a garden project may have to make out bills and reports, in the doing of which spelling is necessary, but his work on spelling is not, in that case, strictly a spelling project.

Summary. A project may be defined as a large problem carried on under natural conditions and involving the maximum of intelligent thinking. One spelling project is that of discovering methods of study for the improvement of individual spelling.

3. Learning to Spell

Diagnosing. Several years ago when I was taking a course on methods of teaching, everybody was searching for a few general methods that would handle all the prob-

lems of teaching. We had an ardent hope that such a system could be found. But more recently the point of view has very strikingly changed, due partly to the fact that we could find no general methods that would solve all problems, and partly to the introduction of scientific methods.

If this change could be summed up in a sentence it would be this: "In finding solutions to the problems of teaching we now use diagnosis and analysis." By diagnosis we mean just what the doctor means; that is, when we have something wrong with us and go to the doctor, the first thing he does is to study us closely, take our temperature, our pulse, our blood pressure, and perhaps take X-ray pictures of us. Working from these facts he finds out exactly what is wrong with us, and, when he has found the trouble, he tells us what to do to correct it.

Similarly, in school the careful and scientific teacher studies the difficulties that the children have in learning. He analyzes them, makes his diagnosis, and then finds some way of helping them cure the difficulty.

Let us illustrate in the case of spelling. When children spell incorrectly the first question that we ask is — What is the trouble? Then when we have found the trouble we try to cure it. For instance, Cornman, who has analyzed the mistakes made in spelling, finds the following types of mistakes which you can easily recognize as being common:

I. Motor incoördination	483
All those classes of errors whose commission seems to have been predominantly by defect in motor process.	
a. Omission — hoase (hoarse), Main (Maine), etc.	104
b. Addition — wolfe (wolf), etc.	034
c. Change, substitution or illegibility leading to confusion	080
d. M and N — swin (swim)	168
e. Transposition — aminal (animal). Literal or syllabic	076

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f. Wrong letter doubled — speel (spell) etc.	010
g. Attraction — Sensorimotor, roap (rope) follows soap	098
h. Attraction — Ideomotor. A letter or arrangement of letters in a succeeding word calls out a wrong form — groop (group) precedes troop	012
II. Complication — amanole (animal)	022
III. Sensory incoördination	494
(1) Phonetic.	
a. Standard — “Wensday,” “scolar”	114
b. Local and individual — “chimley,” “dest”	082
(2) Confusing — confusing alternatives.	
a. ie, ei; tion, sion; or, er, ar; ly, y (also al, le; ent, ant; se, ce, ze; ance, ence)	136
b. Doubling — Using double letters for single letters — “Hellen,” “gass”	046
c. Non-doubling — “galons,” “weding”	050
(3) Unclassified. Everything else — “Scuylkill” “handerchief”	064

But we need to analyze the mistakes further before we can find out how to cure them. When we do this we may find out that frequently the mistakes are due to carelessness, to wrong pronunciation, or to ignorance of the meaning of the word. Occasionally the error may be due to poor eyesight. Let us take illustrations from Cornman's list. With that in hand, we can see a reason for spelling “Maine” as “main.” The child is already familiar with the spelling of the word “main” before he studies geography. In the words “swin” and “aminal” we see slips of the pen. The same is true of the word “speel.” The misspellings of “Wednesday” and “scholar” are due to the fact that they are pronounced as they are spelled in the table. “Chimley” and “dest,” also, are probably misspelled for the same reason.

It is, therefore, absolutely essential to good instruction that the teacher study the misspellings of children to discover just why they make the mistakes they do. When this is done he can work more intelligently upon the methods

of curing the difficulties, particularly by knowing what to point out to the children. For instance, in curing the error "Wensday" it is perfectly clear that in the correct spelling "Wednesday" careful attention should be paid to the "dnes" by underlining or the use of colored crayon, or by explaining to them that "Wednesday" means "Woden's day" and was named for the Teutonic god, Woden. In handling the word "chimley" it is necessary to teach the children that the pronunciation is not "chimley" but "chimney." It is therefore quite apparent that if we are to use diagnosis we need to have the children spell the words in the spelling lesson before they study them, so that we can find out, and they too can see, which words they can spell correctly. Then when the teacher has given this preliminary test he analyzes the misspellings to see just what the difficulty is, and when he teaches the correct spelling of the words he can lay stress upon the difficult parts that need the most attention.

Summary. The scientific teacher diagnoses the spelling difficulties of the children to discover the causes and in teaching he attempts to find methods by which each specific difficulty can be removed.

Types of Imagery. Before proceeding to methods of class instruction I shall take time to call to your attention certain facts about the types of imagery that children possess, and the general laws of habit which drill lessons should follow in order to be effective. Mental images are of many kinds. We have images of taste, smell, sight, hearing, and touch, and motor, or kinæsthetic, images. Many of us can close our eyes and see quite clearly the faces of people or the words on the pages of some book which we have studied. We may also be able to remember quite clearly the smell of the woods on a wet fall day, the odor of a rose, or of freshly ground coffee. We may also be able to recall the

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taste of quinine or a chocolate sundae. These impressions are all called images.

In spelling we use some of these images. For instance, some people may say, "The spelling of that word does not sound right." They can hear the sounds "in their heads" just as many people can hear tunes. Other people may say that spelling does not *look* right. They compare it with the memory picture stored in their minds. Again, some people cannot be sure of the spelling until they have spelled it over to themselves and they recognize the "feel" in their throats, or they write it out rapidly and allow the hand to have full play in the writing. That is to say, some people are strongly of the visual type, others are of the audile (hearing) type, and still others are motiles (motor type). Most people combine all three types, but the visual is generally the strongest. That is, most people in deciding whether a word is right or wrong first look at it. They may then spell it aloud or, in very obstinate cases, write it out, but usually they resort to visual images first.

This means that in spelling liberal use of all three types should be made. Pupils should pronounce the words (auditory), spell them over to themselves, either aloud (auditory) or under the breath (motor), write them out (motor), and look at them (visual). All three are effective and by their use each student will learn to rely upon the methods which for him are most efficient.

Summary. There are several different types of imagery, used in varying degree by different people. Care should be taken to see that all types are given a chance in drill work on spelling.

Laws of Habit. Learning to spell is simply a matter of habit. What is desired is the ability to write down a word as soon as the need occurs without thinking about how it should be done. For instance, as I write here I think of words that I wish to transcribe to paper; since I am a

fairly good speller I am able to write them down, correctly spelled, without thinking about them very much. If I had to stop to think about how each word is spelled or to look it up in the dictionary, I should waste much valuable time that I can now spend in thinking about what I am going to say.

The ability to write words without having to think about the spelling is spoken of as the ability to spell *automatically*. To set up automatic spelling habits is the aim of all attempts to teach the subject. In forming a habit of this sort there are just four things to do; the statement of these is very simple, but unfortunately it is much harder to perform the task.

Getting a Clear Picture. The first thing to do is to get the pupils to pay close attention to the words to be memorized. They must get a clear picture of them. The word should be written upon the board. The pupils should each pronounce the word because incorrect pronunciation is the cause of one-half of the cases of poor spelling. The syllables should be pointed out and the word should be spelled by syllables; the difficult parts of the word should be emphasized by being underlined, written in colored chalk, or inclosed in a circle. Diacritical marks, however, should not be used. To us who are grown up *crit'-i-çize* looks like *criticize*, or *scis' sôrs* closely resembles *scissors*, but to little children there is as much difference between these forms as there is to you and me between a woman with her hat on and the same woman with her hat off. You or I could learn to know her with her hat off, yet we might be entirely unable to recognize her when we met her with it on.

Attentive Repetition. The second thing that the student needs to do in forming spelling habits is to repeat the words over and over. In doing so the word may be spelled aloud,

written out, or spelled to one's self; or it may be repeated in two of these ways. For instance, the pupil may write it out, look at it carefully, or spell it aloud or under his breath, but mere repetition amounts to little unless it is attentive. The boy may say that he studied his spelling lesson for a half-hour, when as a matter of fact he merely sat with the book before him for thirty minutes, and studied his spelling only five times, for a minute at a time, with five-minute periods between, during which he was thinking of something else. Psychology tells us that we memorize more easily when the periods of attention are short. Five minutes at night and five minutes in the morning will produce better results than ten minutes all at one time.

Repetition is secured in some schools by reviewing the same words from day to day, and, after letting them rest for a time, reviewing them again at the end of each month and the end of the year.

Spelling should, however, be studied chiefly through writing. It is used in writing only and habits closely connected with writing should be set up as firmly as possible. Part of the method of study might include the writing of the words in sentences.

Automatic Control. The third important fact to bear in mind is that unless spelling is made automatic, all the labor is lost. That is to say, in the spelling of *superficial* as s-u-p-e-r-f-i-c-i-a-l the letters must follow each other with rapidity, and certainly without thought. It will not do to spell *sup* and then stumble over *er* or to spell *superf* and stumble over *icial*. This point is very important. If the child cannot learn to spell glibly at one sitting he should make two or three additional attempts. Speed is to be sought for at the expense of everything but accuracy. This is another reason for not having too many words in one

lesson; for with many words it is a physical impossibility to make them all automatic within the time allowed, and if they are not made automatic, little real good is accomplished. A few words, well learned and frequently reviewed, make a nucleus that grows rapidly from week to week and from year to year.

Satisfaction. The fourth fact to be borne in mind is that practice will not be continued and habits formed if the practice does not give satisfaction. We do not do anything efficiently if we do not like to do it. When we have to drive ourselves we slight the task. But, conversely, if we enjoy the practice we give all we have to it. So, in developing habits, it is necessary to stimulate a love for the practice. This can be done by praising efforts, by showing that improvement is appearing, by contests and rivalry, by setting the task of topping our own records, and so forth.

Summary. In drilling on words there are four things to observe: first, a clear picture; second, attentive repetition; third, repetition enough to make the spelling automatic, and fourth, the resulting satisfaction.

Methods of Teaching. The following directions are gathered from the book by Tidyman and the report by Horn which are listed at the end of the chapter, material which should be in the possession of all elementary school teachers or available to them in school libraries. The summary is thrown into the form of twelve statements:

(1) Before beginning to teach the spelling of a list of words the teacher should dictate the words to the children to see what mistakes they make. He should run over the errors and notice the difficult parts of each word.

(2) The word to be studied should be placed on the board and pronounced. It is important that the pronunciation should be accurate and the enunciation distinct.

(3) Its meaning should be defined by being used in

enough sentences and in enough discussion that all the children may clearly understand the meaning. It is ridiculous to have children spend time learning to spell words of which they do not know the meaning, since, obviously, if they are ignorant of what they mean they will not use them in writing.

(4) The word should be written on the board in syllables, without diacritical marks, and hyphens should not be used between the syllables.

(5) The children should pronounce the word slowly by syllables, with a clear visualization of each syllable. This step should not be hurried over, since syllabication helps pronunciation. When the teacher is in doubt about the syllabication of a word he should look it up in the dictionary. By visualization this is meant: (Let us illustrate from the word *pre cede*, which you can try for yourself.) You can visualize it if you look at the word, say *pre* and then pause long enough upon it while looking away, to get a visual picture of it in your mind, separate from the syllable on the board. Then when you say *cede*, if you pause, you can get the image for that syllable in a similar manner.

(6) Fix the children's attention upon the difficult parts, if any. What these are you can discover from the preliminary test, the results of which you have already studied. In *precede* the difficulty is probably found with *cede*. In *Wednesday* the trouble lies in *dnes*, in *scholar* with the *h*, and so on. In fixing attention, numerous devices can be used. Some of these have been mentioned, such as using underlining, colored chalk or ink, or light circles around the difficult part. Sometimes contrast with other words helps, as in teaching *principle* when the children already know *principal*. Attention may also be called occasionally to the rules for dropping silent letters, as in *writing*. The

resourceful teacher can easily think for himself of simple devices that will make the difficult parts prominent.

(7) Have the children look away from the word and try to see it while they spell it to themselves, or perhaps they may be told to close their eyes and try to see the word. After they have seen it for themselves, they may quickly look back at the word on the board to see whether it is as it looked to them when they looked away from it. This exercise is intended to strengthen the visual image.

(8) Have the children, collectively and individually, pronounce the word and spell it aloud several times.

(9) Then have them write the word out several times and while they write it have them pronounce and visualize it. The number of times the word should be written can be roughly determined by reference to the table given above on page 9.

(10) Provide for frequent review drills on the difficult words. This can be done both as class and as seat work. Words can be reassigned and all the children told to prepare for the test or review, or they can be asked to review the class difficulties or they can be asked to study the words, for fun, as seatwork, without feeling that they are preparing for a class review. In addition, when each child gets a list of his own difficulties he may be set the task of reviewing his own list to see how successfully he has learned it. It is very important that seat study of this sort should be scattered at regular intervals throughout the month or the year. As stated above, no method is more effective in getting the children to like spelling than to show them that many words which they spelled incorrectly at an earlier time in the year are now easy for them to spell correctly.

(11) After the words have been taught and studied, they should be dictated to the children in the class period. The

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children should then be given opportunity to look them over and after an exchange of papers the words should be spelled by the teacher or by members of the class and the children should mark the words which are incorrect. Those which still give difficulty should be placed in the class spelling list for further review and study and each pupil should add his own mistakes to his own list, which he keeps in a book, for further study on his part.

(12) Horn has used the following directions for the boys and girls in his school to teach them how to study words at their seats, outside of the class period:

HOW TO LEARN TO SPELL A WORD

1. The first step in learning to spell a word is to pronounce it correctly. If you do not know how to pronounce a word, look up the pronunciation in the dictionary. When you are certain that you know how the word is pronounced, pronounce it, enunciating each syllable as you say it.
2. Close your eyes and try to recall how the word looks, syllable by syllable, as you pronounce it in a whisper. In pronouncing the word be sure to enunciate the syllables carefully.
3. Open your eyes to make sure that you were able to recall the correct spelling.
4. Look at the word again, enunciating the syllables distinctly.
5. Recall again, with closed eyes, how the word looked.
6. Check again with the correct form. This recall (as in 2 and 5) should be repeated at least three times, and oftener if you have difficulty in recalling the correct form of the word.
7. When you feel sure that you have learned the word, write it without looking at the book, and then check with the correct form.
8. Repeat this two or more times without looking either at the book or at your previous attempts.
9. If you miss the word on either of these trials, you should copy it in your spelling notebook, since it probably is especially difficult for you.

The Use of Words. We have said on several occasions in this chapter that the success of a teacher in teaching spelling

is judged by the number of words which the children can spell correctly in their letters and themes and we repeat it here because of its extreme importance. I wish to present three things that the teacher may do to help the children to become careful about this matter. (1) The children should be taught to go over anything that they write for the spelling before they hand it in or send it through the mail. This should be insisted upon by the teacher at the beginning of the year and continually thereafter until each child has made it a matter of habit. Time should always be given for this, no matter how hurried the day. (2) However, much time can be saved if the children are taught not to write a word down, if they are in doubt about its spelling, until they have checked up on it. This means that with older children the dictionary habit should be developed. Even in small dictionaries they can get a good deal of help and, within limits, they may ask a good speller in the class how the doubtful word is spelled. (3) Tidyman mentions an interesting method of teaching children to be sensitive as to correct spelling. He says that children may occasionally be required to check their own papers for correctness before handing them in. They may place the marks (✓), correct; (✗), incorrect; and (d), doubtful, over the words as they pass judgment upon them. The teacher may mark both the correctness of the judgment and the correctness of the spelling. If the children see that their judgment is correct it helps to make them more sure of themselves and if they see that their judgment is not good they are given an added incentive for greater attention to spelling.

Standard Tests. While the number of misspelled words per page in the children's writings is the final basis for determining their efficiency in spelling it is possible to use standard tests or spelling lists as a partial basis for judging

of the efficiency of teaching. The best known of these standard tests is that of Ayres, which presents 1000 of the most common words arranged in columns according to difficulty and with standards of accomplishment for each grade. This test has already been referred to above.

Such tests are of value in determining the average efficiency of classes and should be used if you wish to discover how well your children spell in comparison with other children. You can do this by selecting a list of ten or twenty words from the column which is about medium in difficulty for the class which you are testing. Standard tests are not, however, of very great use in measuring the efficiency of the work that is done during the year unless the words that are taught are those in the lists. It can be seen at once that this is what might be expected because children might learn to spell other words well without improving in those which are given among the 1000 most common words.

Specific Testing. Tidyman mentions three kinds of tests: the preliminary test, the main test, and the review test, all of which should be used. The preliminary test is given before the words have been studied. The main test should be given in the lesson after the words have been studied, and the review tests should be given at later periods. This is a good distinction to make in our thinking about testing.

Variations in Standards. A few words may be said in conclusion on the question of how well children should be expected to spell. We should like to have perfection in spelling, but that is too much to expect in the ordinary class. It is apparent at once through a study of the Ayres scale that children as a matter of fact do not spell accurately all the time and how well the average child does, is further clear from such a table as this; so that if our children

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Quality 7. Sample 126

ward, John vanished behind the bushes and the carriage moved

Quality 6. Sample 12

gathering about them melted away in an instant leaving only a poor old lady

Quality 5. Sample 6

bushes and the carriage started along down the driveway ~~over~~ under

Quality 4. Sample 121

sat on the curb was my driver and

are about the average we can derive some comfort from that fact. However, we know that about two per cent of the pupils are chronic bad spellers whose cases are almost hopeless. We know further that we should expect erratic spelling and that there are wide variations in spelling ability, so much so that some fourth-grade children can spell better than some of the eighth-grade children. We know also that the greatest improvement comes in the lower grades. Likewise girls are better spellers than boys: it has been found that only one-third of the boys do as well as one-half of the girls. Moreover, children whose parents were born and educated in foreign countries do not spell as well as children whose parents were educated in America. So we can say, in general, that while perfection is to be desired, the conscientious teacher need not be worried about its absence. All that is expected of him is that he use the greatest amount of intelligence and persistence of which he is capable in his efforts to make the children spell as well as possible.

Summary. Standard tests should be used but the specific testing of individual pupils in the class is of major importance. Perfection is to be desired but is not to be expected.

Alternation. By alternation is meant having two grades study together and take the work of the one grade one year and the work of the other grade the second year. Spelling is one of the subjects which can very well be alternated. When a special spelling class is taught, the sixth, seventh, and eighth grades can take the same work at the same time. The eighth-grade pupils are not so much better than the sixth-grade in spelling that they cannot study together if care is taken in the selection of words. Spelling should also be given a little time in each of several other periods each week, and particularly in the language work when the "Black List" may be worked upon.

REFERENCES FOR CLASS READING

- AYRES. *Spelling Scale*. (List of 1000 words arranged according to difficulty.)
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- CHARTERS. *Methods of Teaching*, pp. 158-71. (Generic and specific values, and the idea of need.)
- FREEMAN. *The Psychology of the Common Branches*, pp. 115-31. (Methods of Study.)
- *HORN. Part II of the *Eighteenth Yearbook of the National Society for the Study of Education*. (Principles of method in teaching spelling as derived from scientific investigation.)
- JAMES. *Talks to Teachers*, pp. 91-99. (How to get interest.)
- PAULU. *Diagnostic Testing and Remedial Teaching*, pp. 128-48. (A chapter on diagnosis in spelling.)
- PRYOR and PITTMAN. *A Guide to the Teaching of Spelling*. (Specific methods of teaching spelling.)
- *STRAYER and NORSWORTHY. *How to Teach*, pp. 55-91. (Methods of habit formation and memorizing.)
- SUZZALLO. *The Teaching of Spelling*. (General.)
- *TIDYMAN. *The Teaching of Spelling*. (An excellent, practical treatise on spelling.)
- WILKINSON. *Rural School Management*, pp. 165-84. (Description of plans of alternation.)
- WILSON. *Motivation of School Work*, pp. 15-56. (Nature of motivation.)

* The references which are marked with a star are those which, in the opinion of the author, are the most helpful for the teacher of the common branches.

CLASS QUESTIONS

1. Examine four spellers and criticize them (by criticize we mean always the mentioning of both bad and good) on the following points:
 - (a) Number of words per lesson.
 - (b) Frequency of reviews.
 - (c) Familiar and common words.
 - (d) Diacritical marks.
2. Give six examples of a case in which what was written was misunderstood because a word was misspelled.
3. Should children be allowed to use their dictionaries when they are writing themes? Why? If they may use them, should they be required to use them? If so, in what grades?
4. Should an eighth-grade pupil ever be excused from handing in incorrectly spelled work except on examinations? What are your reasons?

5. Give five sets of examples wherein the same letters have different sounds, and five sets in which the same sounds are represented by different letters.
6. Take Webster's Blue Back, or any other of the older spellers, and pick out twenty-five words which you are sure pupils would never use in writing, unless they secured a college education.
7. Let the class in pedagogy take all the written work (except spelling exercises) of a sixth-grade class for one day. Pick out all the errors and tabulate them. Arrange them alphabetically and notice how many times each was misspelled. See if you can determine any reasons for the misspellings. How many times should each be written?
8. What generic values appealed most strongly to you when you were in the grades? Which now? How do yours differ from those of others in the class?
9. How can you get children interested in spelling through the specific need for the subject?
10. What should be the nature of spelling in the first two grades?
11. Ought a teacher to lower a grade in arithmetic or history because the spelling is bad? Why? If he does n't, what effect will it have on the spelling work? If he does, what effect will it have on the arithmetic or history work?
12. Make a study of your own imagery in deciding how you tell when a word is correctly spelled. For instance, pick out some word that you have difficulty with, and having decided which spelling is correct, study your imagery and decide whether you went by visual, auditory, or vocal motor or hand motor imagery.
13. What has been your best method of studying spelling? Make this a class exercise and note any tricks any of your classmates use in learning spelling.
14. What would you do if you had a speller in your school in which there were many words that the pupils do not understand? If there are ten or more words in a lesson, ought you to cut some of them out?
15. What are the advantages of spelling contests with neighboring schools? With fathers and mothers in the district? What are their limitations?

CHAPTER II

HANDWRITING

1. Subject-Matter

As a basis for the methods of teaching penmanship the school teachers of the nation are very fortunate in having access to the work of Professor Freeman, who has gathered together in the form of rules all the results of the scientific study of penmanship. This material has been drawn upon heavily for the content of the chapter. Use is also made of the detailed study of methods of teaching penmanship made by Professor Capps at the University of Missouri. The Capps material is as yet unpublished.

Function. There has been a widespread idea that the function of subjects was to train the memory, the imagination, or the reason. "Why study arithmetic?" some one asks. "Because it trains one to think clearly," replies the teacher. "Why study history?" "To train the memory." "Why study handwriting?" "To make one neat and accurate." But did you ever stop to think about this — Did the people who invented arithmetic do it to get a device for training the reason? Or does the man who consults a history use it to train his memory? Or was writing invented as a means to neatness and accuracy? As a matter of fact, arithmetic was invented, not to train the powers of reasoning, but to help men to handle number. History was invented, not to train the memory, but to give advice and entertainment from the experiences of the past, and, in like manner, the function of writing is not to give training in neatness but to do something else entirely.

It is true, of course, that arithmetic *does* give mental training, as do history and penmanship, but that is not their real or *intrinsic* function; it is only a by-product. It is not the use for which people are preserving them. It is only an indirect purpose about which we have talked a great deal in school in the past. Our reason for talking about this training or disciplinary function is a long story which we cannot tell here.

The real or intrinsic function of penmanship is to help in the communication of ideas that are worth while, by providing a set of letters made after a conventional pattern. The activities which lie back of handwriting have to do with the desire to communicate. For communication there are several methods provided. We can communicate through oral speech, drawings, hieroglyphs, or words. But when we decide to use words, and attempt to give them definite form, we *write*. The function of handwriting is, then, to provide us with the forms of the letters in order that we may communicate our ideas in writing. A person may be a good speller because he knows the correct order of letters in words, but at the same time he may be a poor writer because he is clumsy and inaccurate in forming the letters. So also a child may be good in composition but poor in writing, and, as happens not infrequently, excellent writers may be poor in spelling or weak in composition.

Clearly, we should have very little use for handwriting if we communicated our ideas only by talking over the telephone or speaking face to face, or even if we used a typewriter. However, everybody finds it necessary at one time or another to communicate his ideas by handwriting because the one to be addressed is not present and no typewriter is at hand.

Summary. The function of handwriting is to assist in the communication of values by providing correct forms for letters.

Handwriting Ideals. It has been decided by those who have studied good handwriting that it possesses three qualities. The most important of these qualities is *legibility*. Writing is well done only when the reader can easily recognize what the words are and read them rapidly. A writer has a social obligation; it is his duty to see that the reader does not have to be put to unnecessary effort in order to read what is written. In addition to this it is highly desirable that the handwriting should be *beautiful*, at least to the extent that it is neat. It is rather clear that flourishing handwriting is less legible, and is therefore not desirable. Rather the lines should be straight, the letters well formed, the spacing should be good, and slant should be uniform. From the standpoint of the penman, the writing should be *rapid*, for his life is filled so full of many important and interesting things to do that he should not have to spend more time than is absolutely necessary in writing. He can make this time comparatively short if he practices a great deal for speed. However, in seeking to save this time he must be particularly careful not to endanger the legibility of what he writes.

The Teacher's Objectives. The teacher has three major objectives in teaching handwriting. In the first place it is very important that he develop in the students a liking for handwriting. It is not enough that children should merely write. It is extremely important that all methods possible should be used (as described in the next section) to get them to develop pride and interest in their handwriting. In the second place, the teacher should aim to set up as ideals in the children the attainment of the three qualities mentioned just above. He should use all incentives and methods possible to get them to work for speed, for legibility, and for beauty. In the third place, the teacher aims for good handwriting, not merely in the

handwriting class, but in the written letters and themes of the pupils which are prepared outside of the formal handwriting period.

It is possible to have two standards of handwriting. A pupil may be jotting notes down rapidly and in such a way that he has neither time nor inclination to write legibly. He may, for instance, be getting ready to write a paper or he may be drafting a solution to an arithmetic problem. In such cases, if the writing is not permanent nor intended for others to see, the quality of writing does not matter greatly, provided the material can be read by the writer. But if the writing is to be permanent it must be legible. A month later if the pupil has occasion to use it again he should be able to read it without loss of effect. If it is to be handed to the teacher or read by other pupils it must be legible. Politeness demands that the reader be not taxed unduly and business sense requires legibility so that mistakes will not occur. Any writing less than No. 9 in the Thorndike Scale is dangerous and should not be permitted except under protest. However, because of the effect of habits formed in note-taking upon permanent writing, children should be taught that even in taking notes or writing for themselves, they should not grow careless.

Summary. The good teacher aims to develop a liking for handwriting and to establish standards of legibility, beauty, and speed in all written work, but may, within limits, make a distinction between standards for note-taking and permanent writing.

The Elements of Handwriting. At first glance handwriting seems to have to do merely with the looks of the writing upon the page; but if we think of it as an activity that is carried on by the penman, there are a number of other items which should be included in what we call handwriting, and these we shall now mention. In the first place, the position of the body is part of the process of

handwriting and upon this point we have learned a number of significant facts. The writer should face the desk squarely, because a side position results in spinal curvature and eye-strain. Both forearms should rest on the desk for approximately three-fourths of their length, to avoid spinal curvature. The paper should be directly in front of the writer. If it is at one side of the middle line the adjustment required of the two eyes is different, with resulting eye-strain and a twisting of the body which causes spinal curvature. The paper should be turned to the left (or to the right in the case of the left-handed writer) until the lower edge makes an angle of about thirty degrees with the edge of the desk, and the writing should slope to the right from the vertical by the same amount (or to the left in the case of the left-handed writer). The forearm should form a right angle with the base of the letters. The hand should be placed with the bottom down so that the wrist does not slope more than forty-five degrees from the horizontal. The hand should rest on the third and fourth fingers and not on the side. The forefinger should rest on the penholder nearer the penpoint than the thumb. Finally, the penholder should be grasped loosely.

In the second place, the movement of the arm, hand, and fingers is part of the process of handwriting. Concerning the proper movements, we have scientific information. The writing movements should call into play a combination of the arm and the four fingers. The arm movement is more prominent in the forward progress from letter to letter and the finger movement in forming the individual letters. The writing movement, particularly in the early stages, should be divided into a series of units of movement separated by a very slight pause. It is not continuous and uniform in speed. The units should correspond to natural divisions in the form of the letters, which

are usually made by all the upward and downward strokes. The result of this is that the writers who are trained to divide the writing into units make marked improvement. The downward strokes of the letters should be toward the body or nearly perpendicular to the edge of the desk. This produces a slope in the writing of about thirty degrees. In right-handed writing this causes a forward slant and in left-handed writing a backward or backhand slant. If the child can readily use his right hand, he should do so. If he has a very strong preference for the left hand and finds it much more difficult to use the right hand, he should be allowed to use the left.

In the third place, when we come to consider the appearance of the handwriting on the page, there are five elements which are to be taken into account. The *spacing* between the letters and the width of the letters should be uniform and in conformity with the system used. The *slant* should be uniform, that is to say, if the stems of the letters are extended by long lines they should be parallel. The *alinement* of the letters should be even: the single-spaced letters should, at their bottoms and tops, touch an imaginary straight line drawn across the page. Two-spaced letters should be of the same length, as should also be the loops of the three-spaced letters. The *form* of the letters should follow the system taught. Finally, the *quality* of the line should be uniform. This means that some parts of the letters should not be heavier than others. The pen should bear uniformly upon all parts.

Summary. In handwriting, attention should be paid to seven points — position, movement, the forms of letters, spacing, slant, alinement, and the quality of the line.

Handwriting Errors. Penmanship provides one of the clearest possible examples of the use of analysis of difficulties encountered by pupils in learning. Just as in

spelling we find that they have much more difficulty with some words than with others, so in penmanship when we analyze their writing, certain difficulties appear.

It is important for the teacher to know what these difficulties are, because they are the points upon which most time should be spent. As a matter of fact, there are difficulties connected with each of the seven factors in handwriting that were mentioned in the last paragraph. The position of the pupils may be wrong, and their handwriting movement may be incorrect. To illustrate the prevalence of errors in form we may cite the case of the class of forty-four pupils whose handwriting was diagnosed by Professor Capps. He found that in this class thirty-eight pupils

ERRORS OF SMALL LETTER "a"

NAME OF ERROR	ILLUSTRATION OF ERROR	NO. OF CASES
First down stroke looped		23
Top open		12
Second up stroke too high		4
Second down stroke looped		3
Second up stroke too straight		2
Second down stroke too high		2
Top too narrow		2
Second up stroke too low		1

showed faults in alinement and letter forms, while twenty-eight had a faulty slant, twenty-five had a poor quality of line, and twenty-four made errors in spacing.

It is evident, of course, from these figures that attention needed to be paid to all of these in this particular class, and as a matter of fact, such is the case in practically all classes. The analysis can be carried further, however, by analyzing the faults in connection with each letter. For instance, it was found in the class just mentioned, that the above were the types of error in the letter "a" in the forty-four samples examined.

It will be observed that so far as this particular class is concerned, the two chief faults were the looping of the down stroke and the leaving open of the top of the letter "a."

If the teacher is to approach the subject of handwriting in a scientific manner, it is absolutely necessary that such analyses of the errors of children be made. The analysis may not be carried on with scientific detail, but certainly the most outstanding errors should be determined. Otherwise the teacher will not know where to place the emphasis.

Writing is like keeping one's health. Most of us know a few general health laws and a number of facts about colds, measles, etc. By using these we can keep healthy, for all practical purposes, without knowing any system of medicine or hygiene. But when ill health occurs, it is necessary for us to consult a doctor, who by diagnosing our case finds out exactly what is wrong and gives specific treatment for the trouble. The parallel with writing is close. We need to know and practice a few general facts about position, movement, and form, but in addition to that, we need to make a diagnosis of specific troubles such as open-mouthed "a's," loop-stemmed "d's," etc. These special facts deal with those personal penmanship "dis-

eases" to which we are peculiarly susceptible. To these we need to give specific attention and with them in mind we can develop facility in writing a legible hand.

Summary. The work taken up in the writing drills should be dependent upon what the pupils seem to need most urgently.

The Copy-Book. Copy-books should be used as reference books. They show the correct form of the letters. Set exercises written in them are useful. In such exercises the bottom line should be written first and then the one above, so that children will not copy their own mistakes. For the reasons given above, copy-books should not, however, be the sole means of securing good writing. The best results are secured when the pupil's errors are drilled upon in exercises prepared for that purpose.

Copy-books present handwriting systems of which there are a large number, and about whose relative worth there has been a great deal of discussion. As a matter of fact, however, one system of handwriting is about as good as another for practical school purposes. The day for developing expert penmen on a large scale is past. There was a time before the advent of typewriters when the copperplate hand was an important factor in business success. But the invention of the typewriter has changed this to such an extent that there are very few expert penmen. Consequently the teacher has come to realize that children need to develop merely legible handwriting that can be written at ordinary speed and with reasonable neatness. She is not expected to train expert penmen who can produce Quality 18 in the Thorndike Scale. She aims rather to make reasonably fluent writers whose handwriting approximates to the legibility of Quality 12 or 13 in the scale. This can be done about as well by one of the current systems of handwriting as by another.

2. How to Get Interest

Immediate Interest. The parallel between spelling and handwriting is close. The methods and conditions of securing interest are of the same type. We have, first of all, the possibility of finding pupils with an immediate interest in writing. There are a few such in every school. There are also many who like to write but who dislike special instruction in writing, and there are a number who do not like to write under any conditions. It is these latter two classes that furnish the problem of arousing interest, since the pupils who are naturally interested in writing furnish no problem of motive.

Mediate Interest. Again referring to our parallel with spelling, we find that mediate interest may be secured in many ways. We may, for instance, make an appeal to generic values. We may say, "Your grade depends upon your handwriting. If you do not improve it you will have to stay in." This is a method commonly used, and, of course, known to all our readers. But we may, as in spelling, make our approach by way of the specific function of the subject. In the case of penmanship the function, as we said above, is to produce legible characters rapidly. So, if the child can be shown that he is being misunderstood because he does not write legibly, then if he wants to be understood, he will be careful. If he does not care greatly about being understood, because he assumes that the reader can worry along and get the meaning, the case is more difficult. If, however, he gets into a natural difficulty because his poor handwriting is misunderstood, he is likely to become interested in good writing.

You may have heard of that Chicago gentleman who decided to take his wife to the matinée. After getting the tickets he sent a messenger to the house with the message —

"I have gotten tickets for the matinée, meet me at ——" etc. When he went to meet his wife he found her there with eight lady friends. Drawing her aside, he inquired the reason for this great generosity and upon reading again his note he found that, instead of saying, "I have gotten tickets," etc., he had really written, "I have got ten tickets," etc. Doubtless in the future he was more careful about his penmanship.

The more frequently it can be borne in upon the child that his illegible handwriting is handicapping him in telling what he wants to tell, the easier it will be to get him to work upon his writing. A teacher should have too much self-respect to consent to read careless handwriting that is hard to read.

The Writing Hospital. A very satisfactory plan of dealing with interest in writing is found in what the children call the "writing hospital." The idea is this: In the sixth to eighth grades it is felt that children write poorly either because they do not know how to write well or because they are careless. Both of these cases are taken care of by the hospital in the following manner: If, for any cause, a pupil in the class does unsatisfactory writing, he is put into a special writing class, while the pupils who have reached a satisfactory standard are not required to take formal writing practice. The pupil with the unsatisfactory writing is put into the class because something is wrong with his writing, and he remains there until he has improved. If his trouble is merely carelessness, a week in the class, during which time his more careful classmates are at work upon more interesting and attractive material, usually cures him. If his trouble is not so much carelessness as inability to write correctly, special attention can be given to his errors and to drill upon correct forms.

The hospital idea can be used in ungraded schools by

having all the writing taught in a common class for the two upper grades; those who write legibly and with facility do not need special drills. Those who are erratic in their writing may be assigned to the writing class at any time, to remain there until their written work outside of the writing class comes up to the required standard. The test in each case should be based, not upon the writing done in the hospital, but upon the quality of the writing done during the day in connection with other subjects. Or, if the teacher feels that in the upper grades all the children need some drill, he may teach the good and the poor writers together twice a week and excuse the better writers for the third period, which then becomes the hospital class.

Self-Analysis. One of the very best methods of getting interest in handwriting is to lead the children to diagnose their own handwriting difficulties, to work upon them, and to watch the improvement. This is an excellent method because it enlists the coöperation of the children. The burden of improvement is placed upon them and they are helped in their work because they see that this mysterious and seemingly impossible task of improving their handwriting is simplified when they know that they have only a half-dozen mistakes which they need to watch carefully. This is very well described by Professor Capps, who studied with each sixth-grade pupil the errors that he made and wrote a list of them. For instance, in the case of Pupil No. 17, he found nine errors, as follows: (1) the words were crowded together; (2) the alinement ran downward at the right side; (3) the lower loops were too long and too large; (4) the upper loops and stems did not come up high enough; (5) the looped letters had an extreme slant; (6) the "t's" were too tall and were not crossed horizontally; (7) the "r" was rounded; (8) the "d" was looped at the stem; and

(9) the "f" had no top loop. The pupil's attention having been attracted to each of these faults, he was, during a period of six months, given exercises to correct them. In addition to this, several samples of his writing were taken at five times during the year, and the average for the samples was worked out with the following results: In October he made an average of 8.3 on the Thorndike Scale. In November his average was 9, while in January it was 10.3, in March 10.1, and in April 10.3. At the same time his speed increased from 79 letters a minute to 93.

It will be noted that he reached his best point between October and January. His improvement was quite significant during these four months, for, by reference to the standards given later in the chapter, it will be noticed that in this time he made improvement equal to that which is ordinarily accomplished in quality in two years, and had much more than the required eighth-grade speed.

Other Methods of Getting Interest. In his careful attempt to use all possible incentives to get children interested in handwriting, in the class just mentioned, Professor Capps collected seven different methods to supplement the self-analysis which was the basis of his course. (1) Through the publishers of the system which he used, he secured copies of the handwriting of the children of other schools in other cities. These showed the pupils all the difficulties that other pupils were able to overcome, and after they had examined the material they were told to copy the handwriting specimens and, if possible, to write better than the samples. Then when the work of copying was finished, the pupils exchanged papers and examined the samples of writing to see which was better. (2) Very important was the handwriting of the teacher. It is quite clear that unless the teacher writes a legible hand it is quite futile for him to try to teach children legibility. It is as foolish for the

careless teacher to scold pupils for carelessness as it is for a profane father to whip his boy for swearing. Carelessness in writing on the board can never be excused in teachers. (3) Displays of the ten best samples of handwriting out of the class of forty-four were frequently made on the bulletin board. (4) The reasons for good handwriting were discussed in class. The children gave all the reasons of which they could think while the teacher listed them on the blackboard, later to be copied down by the pupils for use in the manual which I shall next describe. (5) Pupils' manuals were made. Certain suggestions were made to the pupils about the advisability of making a manual of their own, which were enthusiastically taken up and added to by discussions. These suggestions had to do with their preparation of a design done in pen and ink, the description of correct position and the inclusion of a few fancy drills such as "watch-and-chain," "fan," and so on; a description of the difficulties in making the small letters with directions for remedying them, similar work upon capitals — a monthly record of the speed and quality of the writing, rules about how to form habits of good handwriting, and a list of the values of good penmanship. (6) One of the best methods of developing interest was the use of competition. The teacher appointed captains, who selected the members of their teams and became responsible for them. When the pupils were given short sentences to write, the captains collected the papers from the members of the teams, and checked the words and letters that were most in error while the pupils practiced upon these. After this had been done for a week, the captains were asked to score the work of their teams upon the Thorndike Scale, used in connection with short dictated sentences. Then the average for each team was calculated after the teacher had checked the scores given by the captains. This method was used for

a month to develop a great deal of interest. (7) Fancy exercises can be used to good advantage in showing the children that there is an aesthetic element in handwriting. By "fancy exercises" are meant those known as "fans," "watches and chains," "lamps," "Charlie Chaplin," and so on. These exercises, while often crudely done, cause a great deal of interest.

Summary. In developing interest in handwriting, we can at once dismiss those who are naturally fond of handwriting and consider only those who have to be induced to like it. This can be done by making an appeal to the intrinsic function of handwriting by showing what happens when handwriting is illegible. Most important of all is the method of self-analysis and diagnosis by which the pupil works upon his own specific difficulties. This is particularly valuable when, through tests at regular intervals, he can watch his own progress. In intensifying the interest in handwriting, the teacher must invariably write well on the blackboard himself. He may also use such devices as collected samples of other children's handwriting, the preparation of manuals, displays of unusually good handwriting, frequent discussion of the reasons for good handwriting, fancy exercises, and team competition.

3. How to Teach the Technique of Handwriting

In describing methods of teaching children to write a good-looking, legible hand with the requisite speed, it is important that attention be directed to the necessity for the careful teaching of forms in the lower grades. It frequently happens that in the effort to get the children interested in writing, little instruction is given to the children in forming letters. I have frequently noticed first-grade children who seemingly have been left to their own devices in figuring out how the letters in their names are written. For instance, I saw a child who, in forming the letter "d," made the stem first, added the oval next, put the first up stroke in as his third step, and the curve from the bottom of the stem as his last step. Clearly, lack of

good teaching was evident and the child was destined to have a great deal of grief in overcoming these bad habits. In the early grades no attention should be paid to speed, because all later success is controlled by the ability to make the letters accurately. Freeman says that the speed of writing should be low at the beginning and should be gradually increased from about thirty letters per minute at the end of Grade II to about seventy-three letters per minute at the end of Grade VIII. Young children are incapable of making new movements rapidly and even the standards of accuracy of letter formation should not be too high, and should increase only gradually.

The letters should be large at the beginning because they are easier to make and do not need to be so accurately formed as small letters, but the movement in forming the letter should be carefully safeguarded. The materials used by the primary child in writing should be such as to make the task as easy as possible. The first-grade child should write with a pencil having soft lead, on unglazed paper. The pencil should also be used in the second grade and pen and ink should not be introduced until the third grade. Correct position and movement should be taught early, and persistently followed up throughout the grades. By this means a child in the first grade should be expected to achieve legibility almost to the degree shown in Sample No. 9 in the Thorndike Scale. By that time the child has learned how to form the letters, has been taught the correct position, and has practiced upon the proper movement. In the case of individual children, considerable variation should be allowed from the position and movement which was outlined earlier in this chapter. Children differ in size, and the height of the desks is not always exactly adjusted.

Diagnosis. From this time on, diagnosis and self-analysis can be used with increasing value. As has been stated so

frequently in this chapter, the children and the teacher should both study the errors in order to pay particular attention to them. It will be necessary for the teacher to analyze the handwriting of the children as a class to find the points which the general class exercises should stress, and in addition to make a diagnosis of the specific difficulties of each child. These, then, are put before the children as specifications of the points to which they are to pay particular attention.

Such a method of studying handwriting naturally leads to individual instruction. It is not enough for the teacher to dictate sentences which the children are to write. He must circulate among the children in the writing exercises and call attention to the mistakes which individual children are making. Outside of the writing class it is important that, from time to time, the children's errors should be called to their attention. Both in the class and outside, the individual child can be given specific exercises to correct his specific faults. Nor does this take a greater amount of time. The teacher does not need to overburden himself with individual instruction, but he does need to have the scientific attitude and he must be alert in handling his class. The point of importance is not quantity of instruction so much as the quality of the teaching. The lazy or dull teacher will not be interested in doing more than carrying through set assignments. The industrious and intelligent teacher tries to spend his time to the best advantage during the hours of his teaching.

Attentive Repetition. There are two ways in which the child practices handwriting. One is to go through the exercises time after time without paying much attention to what he is doing. This is mere repetition and is very wasteful of time. In order that practice may be most valuable, *attentive* repetition is necessary. The child's at-

tention should, as far as possible, be kept upon what he is writing and upon making the forms correctly and speedily. For this reason it is not advisable to have a handwriting drill period of more than ten, or at the outside, fifteen minutes. Short, quick, and intense drills will actually accomplish more than longer periods of practice. In carrying on the drill exercises it has been found that counting is a useful temporary device. Particularly is it good when the counting is used to group the movements into units by the pauses between the units. The orders and instructions should be clear and pointed so that no doubt is left in the pupils' minds as to what is to be done. All class mechanics should be as simple as possible with the object of giving the most practice in the shortest time. If there is ten minutes allowed for the writing drill, as little time as possible should be spent in getting ready the material and putting it away; while the drill is on, every minute should be utilized.

When children work for speed they sometimes lose in quality. At other times the quality of handwriting can be improved by making a fluent penman write more slowly. There is a danger, in other words, of the pupil's writing too rapidly; consequently speed and accuracy have to run hand in hand. There is no virtue in having all the pupils unusually fast writers. They may write too rapidly. Unusual speed should always be checked up with quality. But, on the other hand, a poor quality of handwriting may be improved by an increase in speed. Every case must be decided upon its own merits, the desirable objective being that the pupil should have both high quality and great speed. Of the two, however, quality is the control factor and should never be sacrificed to fluency. When the student's speed is graphed, a fall of the line may be more desirable than a rise.

Standards of achievement should be set up for each grade and these will be mentioned in the next section. These standards should be set before the pupil, and his own writing should be measured in the same terms, in order that he may trace his progress in relation to the standard. Records should also be kept and the pupil's analysis of the form of his writing should be directed along the lines of the record, some of which are given in the next section of this chapter. The use of a chart to show by lines how he is progressing has been found to be valuable.

Writing Projects. Handwriting is related to the project idea in two ways. In the first place, penmanship is used in connection with many other projects, as, for instance, in hygiene projects where the child has to do some writing. In this case we do not speak of it as a writing project.

There is, however, one very definite type of writing project. This has already been illustrated in other terms in the foregoing discussion in this chapter. Bearing in mind the fact that the project has two general characteristics, namely, that the work makes the pupils think, and that it is carried on in its natural setting, we see at once that when the pupils use self-analysis and work upon the correction of their own mistakes in order to improve the quality of their work through practice, we use the project. The purpose of the child is to improve his handwriting, which we teach him to feel is worth while. He uses the process of reasoning by finding out what his difficulties are and by discovering methods of correcting them. He tries out the methods and watches his progress to discover whether the methods work or not. So, because he is studying under natural conditions and using his brains rather than just going through the motions, we feel justified in speaking of the method of self-analysis as a writing project.

Summary. In teaching handwriting, it is important that in the early grades more attention should be paid to accuracy in the formation of letters and to instruction in correct position and movement. We realize also that the project method, which is based upon self-analysis and the correction of specific mistakes, is quite worth while. But this must be supplemented by directed drill and intelligent practice carried on for short periods of time so as to secure the fullest possible degree of attention on the part of the pupils.

Scales. In order that children may intelligently learn how well they write, it is necessary that the teacher make a part of his regular equipment some of the handwriting scales which have been devised. One of these — the Thorndike Scale — is included in the text. Practice on the part of the teacher is necessary in the use of all of the scales, but once this has been secured, they are reasonably accurate means of measuring improvement. Another easily used scale is that known as the Ayres Scale, and a third is the Freeman set of scales, which measure separately the forms of letters, alinement, slant, spacing, and quality of line. These scales may be obtained through the superintendent of schools, who in turn may obtain them from the state university or teachers' college, and if they do not have them, from the following sources:

The Thorndike Handwriting Scale, Teachers College, Columbia University, New York, N.Y.

The Ayres Scale, The Russell Sage Foundation, New York, N.Y.

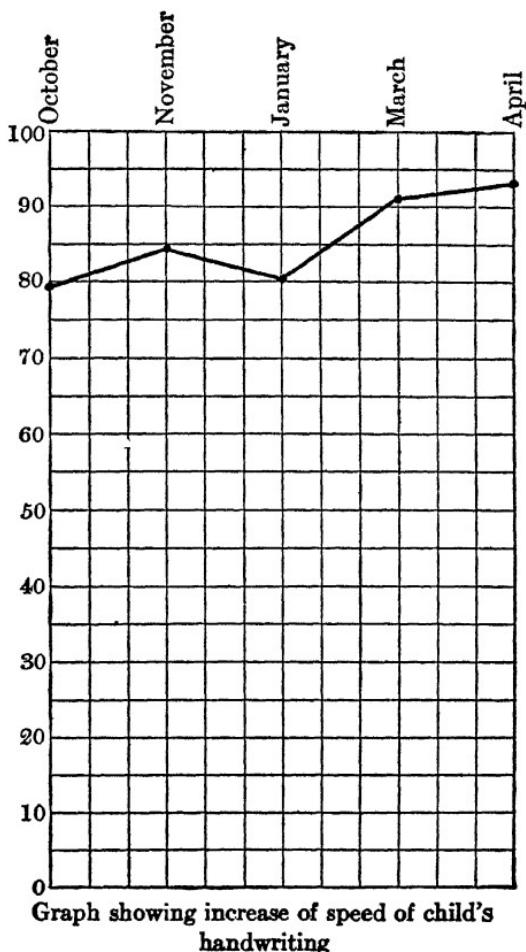
The Freeman Scales, University Press, University of Chicago, Chicago, Ill.

Standards. The following approximate standards of advancement for each grade, which are based on the median score for a large number of children, are presented. This means that the "average" or "median" of the class of a grade should be equal to these. It does not mean, however, that no pupil should not be expected to do better

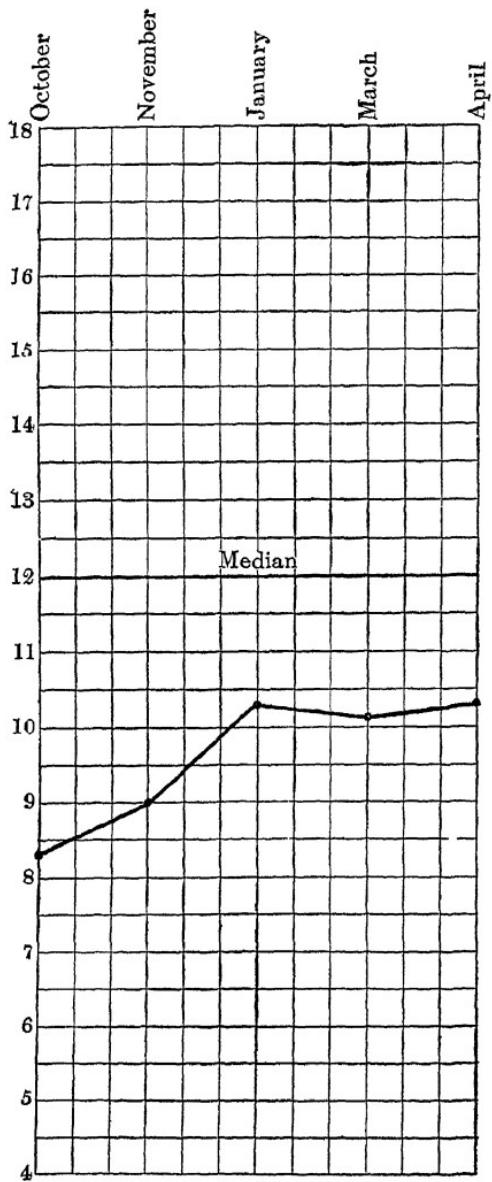
than these scores, since the scores mean that one-half of the children upon whose performance the standard is based made a better score than the median and that one-half of them made a poorer. That is what the median means. It is important in using these standards to explain to careless pupils who can write much better than these medians that they should not be satisfied with their work if they wish to do as well as the pupils from whom the standards were made. The standards are chiefly of use to the teacher in judging of the ability of her class as a whole rather than as to the ability of the individual members of the class. The standards, after Freeman, are as follows. This means that in Grade II children who have a speed of thirty letters a minute should possess a quality of handwriting of thirty-five on the Ayres Scale, of 8.5 on the Thorndike Scale, and of eleven on the Freeman Scale.

GRADE	MEDIAN SPEED	AYRES SCALE	THORNDIKE SCALE	FREEMAN SCALE
II	30	35	8.5	11
III	44	39	9.3	12.5
IV	51	46	10.2	14.5
V	60	50	11.0	16
VI	63	57	11.9	18
VII	68	62	12.7	20
VIII	73	66	13.5	21

Records. Simple records showing the proficiency of each child from month to month can easily be made, and if these records are squared off it is possible to make a graph of them. This can be done for both speed and accuracy. For instance, a record showing speed and quality may be made as follows. Along the left-hand side of the speed record are given the number of letters per minute and along



HANDWRITING



Graph to show increase in quality of child's handwriting as measured by the Thorndike Scale

the top is placed the date on which the tests were given. A black line indicates the norm or standard for the grade. A similar chart or record may be made for one of the scales, where the quality can be indicated along the left-hand side and the time of the test placed at the top. By joining the points on these scales a graph is made for an individual pupil. It is quite useful to have the children prepare their own graphs. Two graphs for the sixth-grade pupil quoted earlier in the chapter are given as illustrations.

Conducting a Test. We are indebted to Professor Freeman for the following directions for conducting a handwriting test and scoring the papers.

1. Give the pupils some preliminary practice in writing the words which they will write in the test so that they can write them freely from memory. In the second and third grades use some suitable rhyme, as:

“The rain is raining all around,
It falls on field and tree,
It rains on the umbrellas here,
And on the ships at sea.”

In the fourth to the eighth grades use the *names* of the numerals (not the figures), *one, two, three*, etc., practicing up to *thirty*.

2. Be provided with a stop watch, or a watch with a second hand.
3. See that the pupils are ready with pen and ink (or pencil in the grades in which pens have not been used) and paper.
4. Instruct the pupils substantially as follows:

“We are to have a test (or game) to see how well you can write. To write well means to write rapidly and also to make it look well. We are going to write what we have been practicing (make sure the pupils know what this is). You will start when I say ‘Begin’ and stop when I say ‘Stop.’ Be sure to keep writing all the time till I say ‘Stop.’ (If this is the first test, give a trial or two in starting and stopping on other paper than that which is prepared for the test.) Remember, write well and rapidly and keep on writing until I say ‘Stop.’”

5. See that everybody is ready, start the watch, or wait till the second hand is at zero, and say “Begin.”

6. Keep watch of the pupils and start going again any that may stop.
7. Note the watch carefully and say "Stop" exactly at the end of *two minutes*.
8. Glance about and stop any pupils that may continue.

Scoring the Papers. The speed may be quickly and accurately scored by the following procedure:

1. Make a scoring copy by writing out the text and placing above each word the number of the letters in the text up to the end of that word.
2. Note the last letter the pupil has written and give him provisionally the corresponding score by referring to the scoring copy.
3. Read through the pupil's copy to see that it is correctly written and add or deduct any letters he has inserted or left out.
4. Divide by two in order to get the score in terms of letters per minute.

The form may be scored by following the directions which accompany the scale which is used. In general, some practice is needed before scoring can be done accurately.

Summary. The teacher should make definite and constant use of some one of the handwriting scales. The merit of a class should be judged by reference to established standards and records should be kept with regularity. All of these should be known to the pupils and should be used by them.

Alternation. The four upper grades may have a common writing period. It may or may not be in "hospital" form. But in any case the errors in writing are so common that the exercises given to the eighth grade are just the same as those given to the fifth. As a matter of fact, the fifth-grade pupils write, on the average, a better hand than eighth-grade pupils. So all the upper grades may have the same writing periods and exercises. In the lower grades the work should all be incidental to the composition classes and to the other classes that use written work, and

occasion should be taken in every class to teach correct form of both letters and movement. But in both upper and lower grades the writing battle is won or lost outside the special writing class, not inside.

REFERENCES FOR CLASS READING

- FREEMAN. *The Teaching of Handwriting*, pp. 56-116. (Good description of methods of teaching); pp. 118-149. (Description of scale of difficulties in handwriting.)
- FREEMAN. *Principles of Method in Teaching Handwriting as Derived from Scientific Investigation*, pp. 11-25 of Part II, *Eighteenth Yearbook of the National Society for the Study of Education*. (A collection of scientific rules.)
- *FREEMAN and DAUGHERTY. *How to Teach Handwriting — A Teachers' Manual*. (Quite detailed and specific methods of teaching handwriting.)
- PAULU. *Diagnostic Testing and Remedial Teaching*, pp. 149-165. (A chapter on the diagnosis of writing.)
- STARCH. *Educational Measurements*, pp. 60-88. (Description of scales in penmanship.)

CLASS QUESTIONS

1. Take up two of the common systems of writing and compare in the following particulars: (a) slant, (b) forms of letters, (c) beauty, (d) position of pen, (e) position of body, and (f) kind of arm movement.
2. If you were to change the system of penmanship in the school, would you make it in all the grades at once or would you spread the change over eight years, beginning in the first grade?
3. Take the natural handwriting in ink of twenty-five pupils and grade them by the Thorndike standards. Grade them three or four times without letting yourself compare your gradings till afterward. How closely do your gradings agree in each case?
4. As a class exercise, have other members grade to see how closely they agree with you. (As a matter of common practice, do stock judges or corn judges agree?) How would you arrive at the true rating of the specimens?
5. Diagnose your own handwriting and state what you need to do to improve it.
6. As you sit at the desk now provided for you, what is the natural angle for your paper to lie at? When writing at your table at home, what is the natural angle? Does the height of the table have any

effect upon what seems to be the correct angle? Experiment with several writing surfaces of different heights. What is the significance of this for your pupils?

7. What sort of finger grip do you have in writing? What grip have you decided upon as the best? Can you keep the grip for ten minutes at a time? Try it.
8. What is your own opinion about the value of copy-books?
9. Name a number of interests to which appeal may be made in developing a liking for handwriting.
10. Do you think the appeal to the intrinsic function of handwriting is really very practical? Substantiate your opinion.
11. Of what devices can you think to get the pupils to practice their writing exercises by themselves with attention and interest? Collect these devices from all sources available. Are they appeals to generic values or to the specific function of the subject?
12. Analyze the defects in the ten poorest samples of writing in the Thorndike Scale.

CHAPTER III

LANGUAGE

1. Subject-Matter

The Function of Language. The intrinsic function of language, the purpose for which it was created, is to communicate ideas (1) through words (2) with accuracy and effectiveness (3) to an audience.

Language, in the elementary school, is, broadly speaking, made up of a group of subjects, including spelling, writing, composition, and grammar. But each of these serves only a secondary purpose in connection with language, for while they all assist in the verbal communication of ideas, at the same time each has a special function. Writing takes care of the forms of letters, spelling attends to the order of letters in a word, punctuation indicates breaks in the expression of ideas by means of periods, commas, and so on, while grammar deals with the relation of words in the sentence. Language is, therefore, a comprehensive term which includes all these subdivisions and which serves as the medium through which these others may contribute to accurate and effective speech.

Language is, of course, only one medium for the expression of ideas — it uses words. But there are media other than words. Painting uses color and line as its medium, sculpture uses marble, music uses sound, and carpentry uses wood. Language deals only with communication of ideas through words.

In the communication of ideas through words there is a difference between effectiveness and accuracy. Of two

expressions which are equally accurate, one may be very much more effective than the other. Two writers may be equally accurate in expressing the same idea, but their ability to state this idea in forceful form may differ widely. This is clearly illustrated in the sentence, "Babylon is fallen." This is grammatically correct, but by a slight rearrangement of the words we have a very much more effective statement in "Fallen, fallen, is Babylon!" Language study is concerned, of course, with both accurate expression and effective expression.

The idea that language must be effective leads us naturally to the audience. We never talk except to people. Speech was developed in order to permit the communication of ideas. If we think we have nothing of importance to say on a subject, we say nothing. If the audience already knows as much about a subject as we do and we realize this, we keep silent. It is impossible to develop ability in language without taking account of the people to whom we talk and for whom we write. How to make the child conscious of his audience, the methods of getting him to love to write and talk to people, are problems that will be taken up not only in this chapter but in several succeeding chapters where the personal element enters deeply into the teaching of a subject.

Summary. The function of language study is to assist the pupils to communicate their ideas, through words, to an audience, with accuracy and effectiveness.

Ideals. In the teaching of language there are a few ideals by which we measure effectiveness. Clearly, the student should be interested in, and strive to obtain, *accuracy* in the use of grammatical and rhetorical forms. There should also be developed in him something of *feeling for beauty* and artistic polish, within the limits of his youthful ability to appreciate and perform. *Forcefulness* of expression, in-

cluding something more than clarity, is a trait which good speakers and conversationalists possess. I think, also, that children should have the ideal of *service* which expresses itself in the form of a desire to be kindly and helpful. So much is lost in our conversational contacts with people because the personal element is absent and there is no desire on the part of either to be of service to the other. Finally, the quality of *getting other people's point of view* is of prime importance in language. So much argument is carried on because people do not understand each other's point of view. Most arguments would disappear if each side would recognize that there must be something in the other person's position or he would not hold it. Our instinctive tendency is to say that he is all wrong, utterly foolish, or that he cannot be telling the truth. As a matter of fact, people very seldom are completely wrong or foolish. Their point of view looks reasonable to them and perhaps it is just as reasonable as ours. If we can find out what the other man is driving at, and why he takes the position that he does, half the battle of effective English has been fought and won, because when we see his point of view we can fit our language to it so as more easily to show him how our point of view differs from his and in what respects it is similar.

Summary. Certain ideals need to be developed in connection with language study. Some of the most important of these are accuracy, artistic quality and beauty, forcefulness, desire for service, and sensitiveness to the other person's point of view.

The Teacher's Objectives. (1) One of the most important objectives of the teacher in language work is the development of a love for oral and written composition. If the children do not like it, they will never learn very much. They will go through the forms and miss the substance. They will merely joke about their mistakes and smile at their ineffectiveness because they have no respect

for language. (2) In the second place, the teacher needs to lay stress upon the accuracy of oral and written speech. To this end he must know what the errors are, and the correctives for them. He must insist upon the undeviating use of correct forms. (3) A third objective of the teacher is the development in the children of effectiveness of expression. Enunciation, quality of voice, tone, and posture of the body all enter into the element of effectiveness, along with self-confidence and positiveness of personal conviction. (4) Obviously regard for artistic expression should be developed within the limits of the children's ability. The teacher certainly should require neatness, which is one of the most elementary of æsthetic requirements. (5) One of the most important objectives of the teacher is the developing in the child of a consciousness of his audience. (6) The educational research of the past ten years is laying more and more stress upon the fact that the teacher should throw the burden of their improvement upon the shoulders of the pupils themselves. The teacher may feel that it is his duty to correct the English of the pupils and that he has a group of recalcitrant youngsters who do not wish to be improved. If that is the situation it is hopeless. He can help them to improve only when they want to improve and if they want to improve themselves they will take the responsibility for doing so. Consequently his job becomes that of helping them in their English by helping them to help themselves.

Summary. The outstanding objectives of the teacher are these: To develop a love for English composition; to develop accuracy and effectiveness of expression; to develop regard for artistic form; to develop in the children the consciousness of an audience. In doing all of this he throws the burden of improvement upon the pupils.

Specific Objectives. J. W. Pearson in an unpublished report gives an interesting picture of the types of English

skill. He made a list of twenty-seven skills which might conceivably be of value to practical people and collected the opinions of 7752 people distributed amongst nine professions to see which of the skills they thought was the most important. The sixteen skills receiving the highest number of votes are as follows:

1. Skill to read and understand newspapers	6715
2. Skill to read and understand letters, orders, contracts	5845
3. Ability to use good penmanship	5815
4. Ability to spell correctly	5771
5. Ability to read and to follow definite directions	5255
6. Good conversational ability	4884
7. Skill to read and to appreciate good books . . .	4811
8. Ability to think clearly and cleverly	4521
9. Ability to read and to understand the maga- zines	4450
10. Persuasive skill	4413
11. Skill to direct the work of others	3743
12. Skill to pronounce words accurately	3677
13. Skill to gather, organize, and interpret facts .	3515
14. Ability to present facts clearly	3458
15. Ability to read and understand descriptions of goods	3145
16. Ability to write good business letters, forms, briefs, and reports	3068

For the farmers, in which rural school teachers are particularly interested, the figures run as follows for the first ten (there were 2187 farmers who replied to the questionnaire):

1. Skill in reading newspapers	1993
2. Skill in reading definite directions	1863
3. Skill in reading letters, orders, contracts . . .	1813
4. The speaking skill required to direct work of others	1797
5. Good penmanship	1633
6. Skill in reading technical journals	1431
7. Skill in reading books	1290
8. Correct spelling	1213
9. Thinking clearly, cleverly	1079
10. Good conversation	1020

The study of both of these lists will be very instructive because they show what adults feel that they need when they have left school and are working in a vocation.

Diagnosis. In determining what should be included in the course of study in language, we necessarily fall back upon an analysis of the weaknesses that people show in defective speech. Children pick up from their parents a large number of ways of expressing their ideas through words. If this expression were completely satisfactory we would need to pay no attention whatever to language, for we attend only to the things that give us difficulty, or have, in the past, given us difficulty. The ordinary man knows very little about cytosis or the action of white blood corpuscles upon germs. He does know a good deal about the cause of indigestion. The reason for this is that he has indigestion every once in a while and so needs to pay attention to it.

Even so, in language there are simple elements that influence the effectiveness of speech to which we pay no attention because over them we have reasonable control. We single out for attention only the deficiencies.

The result of this is shown in two forms. One is the error list. The other is the body of rules and directions for effective expression, such as rules of punctuation, capitalization, and the principles of unity, coherence, etc.

It may be claimed that in language work we should pay attention to something else besides mistakes. But that is impossible except for momentary pauses to appreciate how cleverly and successfully we have overcome certain deficiencies which we formerly had. The rules, directions, and principles of English composition were really derived after very excellent literature, judged on the basis of effectiveness, was contrasted with very ineffective literature, and the differences were stated in the form of rules

**COMPARISON OF PERCENTAGES IN ORAL ERRORS IN KANSAS
CITY, DETROIT, HIBBING, AND PITTSBURGH**

	PER CENT			
	K. C.	D.	H.	P.
Subject of the verb not in the nominative case	4	4	3	3
Predicate nominative not in the nominative case	2	1	1	2
Object of the verb or preposition not in the objective case	1	1	1	1
Wrong form of pronoun	2	2	3	2
First personal pronoun standing first	2	1	2	2
Failure of a pronoun to agree with its antecedent	0	1	1	1
Confusion of demonstrative adjective and personal pronoun	3	3	2	2
Failure of a verb to agree with its subject in number and person	14	12	9	13
Confusion of past and present tenses	2	12	7	3
Confusion of past tense and past participle	24	14	8	14
Wrong tense form	5	3	5	5
Wrong verb	12	18	20	18
Incorrect use of the mood	0	0	0	0
Confusion of comparative and superlative	1	1	1	1
Confusion of adjectives and adverbs	4	2	2	2
Misplaced modifiers	0	0	1	0
Double negatives	11	9	8	10
Confusion of preposition and conjunction	0	0	0	0
Syntactical redundancy	10	15	21	16
Wrong part of speech due to similarity of sound	1	1	0	0
Confusion of prepositions				2
Pronunciation and enunciation				3
Adv. instead of negative form of verb			2	
Words omitted			1	
Miscellaneous			2	
(Total number of errors)	5883	11,207	10,190	25,676

or principles. No one ever learns an art except upon the basis of attention to those points at which he falls down.

Errors. Analyses of the mistakes of oral language have been made in many cities, and these mistakes have proved to be classifiable around about thirty major items, such as confusion of the past tense and the perfect participle, the use of double negatives, etc. For the information of the reader, a table showing in terms of percentage the distribution of oral errors found in four cities is given on the preceding page.

It will be noted from this table that the most common type of error is the confusion of the past tense with the participle, as in *seen*, *saw*, *did*, *done*, etc. It will also be noted that the next three groups, from the standpoint of frequency of occurrence, include a large number of cases. These are: failure of the verb to agree with the subject in number; as, "he don't"; double negatives, as, "I don't have none"; and syntactical redundancy, as, "John, he is going to lead."

The relative frequency of grammatical errors does not vary very widely in different localities in so far as the most frequent, at least, are concerned, so that what holds on a national scale holds very well for the individual school.

Therefore the accompanying twenty-three most common errors made in Pittsburgh are of interest to teachers no matter where they teach. Out of the 25,676 errors which were collected, the mistakes in the following list occurred more than two hundred times.

THE TWENTY-THREE MOST FREQUENT ERRORS

<i>was</i> for <i>were</i>	1555	errors
<i>seen</i> for <i>saw</i>	1513	"
<i>ain't</i>	1361	"
<i>can</i> for <i>may</i>	1150	"

<i>done</i> for <i>did</i>	895	errors
<i>is</i> for <i>are</i>	777	"
<i>don't</i> for <i>doesn't</i>	721	"
<i>this here</i>	684	"
<i>John, he went</i>	671	"
<i>didn't have no</i>	531	"
<i>them things</i>	479	"
<i>that there</i>	472	"
<i>ain't got</i>	443	"
<i>have got</i>	439	"
<i>ain't got no</i>	435	"
<i>come for came</i>	350	"
<i>it was (is, ain't) me</i>	340	"
<i>why, there was</i>	330	"
<i>didn't do nothing</i>	302	"
<i>lay for lie</i>	280	"
<i>off for from</i>	276	"
<i>went for gone</i>	245	"
<i>give for gave</i>	202	"

It was found in Boise that 40 per cent of all language errors were made in verbs, that 20 per cent were errors in pronunciation, 17 per cent in pronouns, 12 per cent in colloquial expression, 6 per cent in adverbs, and 3 per cent in double negatives. In Kansas City, when the oral grammatical errors were classified, it was found that 24 per cent of all were made through the confusion of the past tense and the participle, that of these over 30 per cent arose from a confusion of *seen* and *saw*, and that the inability to use *did* and *done*, and *come* and *came* ranked next in frequency. It was discovered also that approximately 50 per cent of the errors were in verbs. Double negatives accounted for 11 per cent, 10 per cent of the errors were made in pronunciation, and about 8 per cent in syntactical redundancy. That is to say, if children can use verbs and pronouns accurately and avoid double negatives, they will avoid about three out of four of the grammatical errors in oral speech.

The reader may be interested in seeing the specific verbs that give the greatest amount of difficulty. In Boise, out

of all the verbs collected they found *see* mentioned in 17 per cent of the cases, *do* in 15 per cent, *come* in 10 per cent, *go* in 10 per cent, *run* in 6 per cent, *sit-set* in 5 per cent, *lie-lay* in 4 per cent, *give* in 4 per cent, *begin* in 4 per cent, *ring* in 3 per cent, *write* in 3 per cent, *take* in 2 per cent, *break* in 2 per cent, and a miscellaneous group which accounted for the remaining 15 per cent.

In addition to these errors in grammatical form there are errors in punctuation, capitalization, oral speech, and written form, in such matters of rhetoric as the principles of unity, coherence and emphasis, and in those of narration, description, exposition and argument.

As a matter of fact, if we follow the rules we shall avoid the errors, but we cannot follow the rules as if they were of equal importance because some errors are more frequent than others and should receive more attention. Not only are they more frequent, but they are more difficult to correct and for that reason, also, they require more attention. Which of these should receive the greatest attention is determined by individual class diagnosis. The teacher should make a speech survey so as to know the things to which he needs to pay the greatest amount of attention in the class which he is teaching. This may vary little or much from class to class, depending upon the class. Because we cannot foretell what the variation will be, it is necessary that the preliminary survey be made as a routine part of the teacher's method of instruction.

Summary. The common errors of speech have been listed and should be used as a basis for instruction. But, in addition, a language survey of the school should be made at the beginning of each year to discover the points which should receive greatest emphasis.

The Course of Study. The course of study in language is much more definite than the course of study in arith-

metic. We have a handful of rules and principles which need to be taught, and a group of specific errors of speech which need to be directly attacked. There are approximately sixty rules which need to be taught in the grades and about seventy-five incorrect language forms which constitute the basis for corrective work. This is all that has to be taught in eight years in the grades or in twelve years, including the high school, or in sixteen years including college. The facts to be taught are very simple. The proposition is entirely one of setting up correct habits of speech so strong and vital that they will dominate the incorrect habits which the student acquires before he comes to school or learns outside the schoolroom or even in the schoolroom itself. The course of study, then, as revealed in the textbooks, which seem to be so largely a hit-or-miss collection of lessons on literature, of plays, games, personal experiences, etc., is based upon this foundation which has just been mentioned — the 135 elements of correct speech. In giving the wide variety of content to language books, the authors are seeking to give new forms of drill and practice on these 135 points. The correct use of *seen* and *saw* may come up in a number of different lessons, such as reproduction lessons, lessons based on literature or on pictures, and in debating or story-telling. The seeming lack of organization of the course of study in language is not real if the authors have done their duty conscientiously.

~~Textbooks.~~ The teacher, in introducing language facts, should not feel bound to follow the order of lessons in the textbook. His first duty is to make a language survey and learn the points which give the children trouble. He should decide upon the order in which he will treat these points and should then use the language textbook for instructional material. If the book has a checking list consisting of all the rules that have been taught, the teacher should be very

familiar with it and use it constantly. If the difficulty to be treated is the confusion of *seen* and *saw*, the lessons in the book that deal with it can be used as the basis for practice.

In general, the inexperienced teacher will follow the order of material in the text until he can feel his way and decide upon an order which is better, in the light of the needs of his own class.

It is impossible for the writer of any textbook to take up points in the exact order that will prove the most satisfactory for an individual class. He has built a textbook to be used in all forty-eight States in the Union, and the best that he can do is to present some sort of organization which has worked in certain specific cases, but the publishers would be foolish to claim that his order will hold for every class in every school. That is to say, the course of study in language and grammar should be psychological rather than logical. It is not necessary to teach points in logical sequence; they should be taken up at the psychological moment when they seem to fit best into the class-work.

Standards. The standard by which to judge language form is simple to state. A legible letter, essay, or theme, correctly spelled, properly punctuated, grammatically correct, with easy flowing sentences containing as much brightness as may be thrown in, is sufficient for all school purposes. It is very evident to me that no direct attempt should be made to secure the polished literary form of great artists. It is sufficient to have school children write essays and themes with legibility and in conformity to the rules of spelling, punctuation, and grammar. A good, clear letter is all that is *necessary*. The standard for oral language is the same, except that in oral language no attention is paid to spelling and writing.

Form in both written and oral composition is to be

judged in the grades, as in life, by the work done outside the language class. The form of arithmetic exercises, physiology notes, geography and history reports, and personal letters, determines quality. If this is poor it makes little difference what sort of work is done in the language class.

Teachers complain of two difficulties. One group of teachers says that the composition work of the children is very slovenly. Another group says that when children pay too much attention to writing, spelling, etc., they become stilted and stiff in what they write or talk about. In dealing with these two criticisms a double standard will solve many problems. The teacher may allow two standards in written work. I find that most people who write anything important need to make at least a first draft and a final draft. Sometimes it is necessary to make two or three additional drafts in between the first and the last. The first draft is usually very rough. It is dashed off in the heat of the idea. It is not the kind of work that one would wish to be judged by. The final draft, if one is neat and considerate, looks very different. It is worked out with due attention to form.

The first criticism — that the pupils' work is slovenly — arises from the failure of the teacher to require a final draft, legible, readable, and neat in form. The teacher accepts the first draft and complains of slovenliness instead of requiring a legible draft. The second criticism — that the pupils are stilted and formal — arises from the failure of the teacher to allow the pupils time for, or to teach them the methods of, making a first draft. Then, clearly, when the pupils have to write very legibly, and in fact have to stop to make corrections, all the time fearing that they may make some mistake, they will write as stiltedly as a young man talks when he visits very precise people in un-

usual surroundings and fears with every word he says that he will make some bad mistake. If the teacher will show the pupils how to make two drafts, allowing natural work in the first and requiring careful revision in the second, the content will be more spontaneous and at the same time the form will be careful and legible.

Standard Tests. As in spelling and handwriting, so in language we have a number of standard tests. Efforts have been made to devise a scale for grading written compositions. As you know, it is difficult to know exactly what grade, in terms of percentage or rank, should be given to a composition, so Hillegas, Willing, Ballou and others have worked out scales which run substantially as follows: They collect a large number of compositions in, let us say, narration, and ask a large number of judges to rank, individually, these compositions in what each thinks is the order of merit, from the best to the poorest. The judgment of all these people is pooled and a sort of average is run out. Then a sample of the very best, the very poorest, and of a number in between the best and poorest, selected at regular intervals, are drawn out and arranged in order in the scale. For instance, Willing has a sample that is worth 90, another that is worth 80, another worth 70, and so on down to 20.

The idea is that a teacher may take the compositions of his class and, after reading each, decide which one of the stories in the scale it is most nearly like, with the object of giving it that grade.

These composition scales are interesting to study and are of value to the teacher, but a great deal of work has yet to be done in this very difficult field before we can hope to have thorough-going standard scales for composition.

I have developed some diagnostic language tests which were based upon the study of approximately 100,000

errors made by children in Pennsylvania, Ohio, Illinois, Minnesota, Idaho, Missouri, and Texas; there are three of these tests, one on pronouns, one on verbs, and a miscellaneous test. The object of the tests is to find out whether children are able to recognize the mistakes which they most commonly make. These tests take the following form. The children are given a number of sentences and are told that some are correct and some are incorrect. They are then asked to check those that are correct and correct the errors in the others. While I may be accused of prejudice in favor of these tests because I happen to have made them, it seems to me that these, or others like them, are of very great value to teachers in making language surveys, because they show with great definiteness which of the common mistakes children fail to recognize and those which they handle with considerable skill.

Tests have also been made for punctuation and for accuracy in copying. Starch's Punctuation Scale is an example of the former and the Boston test is an example of a test for the latter. In the Boston test it was found, after having been given to 4494 pupils in the ninth grade, that each pupil made an average of five and one-half errors in the test and that these were distributed as follows:

Undotted "i's"	8794
Punctuation	5876
Spelling	5829
Omitted words	4077
Wrong words used	840
Capitals	644
Added words	606
Uncrossed "t's"	606
Misplaced words	105

It will be understood that in this test the children were each given a printed selection containing about fifteen lines and were asked to copy it in handwriting. So these

are the mistakes that were made by children in copying when they had the material to be copied right in front of them. It is probable that while these pupils seem to make a large number of mistakes they are somewhat above the average in accuracy in copying.

2. Interest

Our problem in language study is that of getting the children interested in language forms — grammatical facts, rhetorical rules, and information about punctuation.

Basis of Interest. Leading to the discussion of methods of doing this, there are three facts that throw much light upon the subject. These are the following. We show interest in conversation (or writing): *first*, when we are interested in the topic of conversation; *second*, when our audience is interested in it; and *third*, when our hearers do not know as much about it as we do. On the other hand, we are not interested in conversation if we are not interested in the topic, if our audience seems to be bored, or if those to whom we are talking know much more about it than we do.

A few illustrations will make this important point clearer. Last summer three friends of mine went to Sedalia and while there heard a piece of gossip about a citizen of our town.

A. When they returned, two of them rushed into my office on some pretext, to tell me the news. I had not heard it and proved an appreciative listener. Here were all the conditions necessary for a freely flowing tongue, and my friends rose to the situation.

B. After they left, another of my friends happened in, and I started to tell him the story; but he was so worried about something else that I could not get his attention — my audience was not sympathetic; so I dropped the sub-

ject and began to talk about another matter. I didn't see any use in wasting words on him when he was not interested.

C. In the course of a few minutes another mutual friend dropped in, and I proceeded to tell him the interesting episode. He said, "Yes, that certainly is great; Tom just told me about it." So again I dropped my story because I do not enjoy telling people things they already know.

D. Now, it so happened that there was one item in the story that was not clear to me, and a little later, as I chanced to see the third of the friends who had gone to Sedalia, I asked him to tell me about it. His answer was short and to the point, "You know I haven't any use for that fellow, and I didn't pay any attention to the story." So *he* stopped talking.

Here in this one illustration, we have all the three factors of interest.

In school language work frequently not only one but all of these factors are missing. The first case I shall mention is a very common one. The fifth class has just had a lesson on the artist Millet, and as a composition exercise the class is asked to write out the substance of the lesson. It so happens that this lesson is not interesting to any one in the class. Here we have a case in which a boy writes a theme on a subject in which he is not interested, also writes it for an audience (the class, or the teacher) that is not interested and that already knows as much about it as he does. Out of school the story of Millet would not be the subject of the pupils' conversation. In the schoolroom the pupils are compelled to write about it. It is, therefore, no wonder that the written work and the oral work in schools is so monotonously poor. The children's hearts are not in their subjects. The chief reason why normal children hate language work is that some one of these factors of interest

is absent. If they are all present, children can no more help growing in language than a flower with plenty of water, soil, and sunshine can help putting forth buds and leaves.

Summary. In order to secure interest in composition work it is necessary that pupils have something interesting to talk about, and an interested audience not already possessed of as much information on the subject under discussion as is the writer or speaker.

Topics of Interest. The first important consideration is to get topics of interest to the pupils. There are many of these, but of one sort in particular I wish to speak first.

Most language facts should be taught incidentally in the grades, in rural schools. Taught incidentally, the interest will depend upon the attractiveness of the other subjects and the way in which they are handled. If they are interested in history and geography, there is one of three factors present. Very often the other two can be handled by a little ingenuity on the part of the teacher. For instance, instead of asking a pupil merely to reproduce on paper the story of *The Man Without a Country* after it has been read, much better results will come through a slight recasting of the assignment to this form, perhaps: "Was the punishment of Nolan too hard? Why?" or, "Were the officers and sailors sorry for him? What makes you think so? Did they think his punishment was too hard? What makes you think so?" Here, by a slight shifting of the phrasing, the teacher can change a dry assignment into a living problem. It then fulfills all three conditions of interest — a topic of interest to the pupil, one in which he thinks his audience will be interested, and one in which, since he makes up his own mind as he goes along, he will feel that his audience does not know all the facts. As a result he feels that the questions are worth discussing. In

history and geography this same ingenuity produces slight changes that transform dead topics into living questions. It is a quality in teachers that is partly native and partly acquired. Newspaper men must have it, because they have to take dry facts and, by viewing them at a different angle, translate them into living news. When the reporter hands in a prosy story, the editor, by a slight but subtle and skillful touch, changes it so that it excites interest. He does it, not by telling an untruth about fact, but by giving fact an interesting turn.

For the teacher this is most important, because in every subject it makes the difference between prosy and living recitations. There is only one way to get it, and that is by working for it. Directions are not availing. One has to work for the expression — the question and the turn that will do the work.

Other Examples. Besides pleasing and vital problems, there are a number of topics that lend interest to language classes. One can, with little children, get much interest for some time through letter writing. There is a fascination about putting on paper ideas that another at a distance can read, which is particularly thrilling to young children. If envelopes can be made and addressed and a play post office established, further delight and realism is added to the process. With older children, as well as with little children, a real correspondence may be carried on with other rooms and schools in other parts of the nation. In this latter case, the pupils write about the striking or peculiar things in their locality to other pupils entirely unacquainted with these things, but who, the writers believe, will be interested in their descriptions.

What may be called superlative or unusual experiences always possess interest for the narrator and usually for the audience. The time at which we were most thoroughly

frightened, the worst horse we ever broke, the hardest rabbit to trap, are things that we wish to tell about and that other people enjoy hearing. These experiences are found in the life of every boy and girl; and while he would not spend a second to tell about a horse in the abstract, he will grow eloquent in describing how he broke a horse, if that is unusual to his auditors, or in describing how he broke his hardest horse, if breaking horses is a commonplace with his audience.

Autobiographies are interest-provoking. School children occasionally want to write their own biographies, but in many cases they love to write the autobiography of a pet dog, a knife, a postage stamp, or a pair of shoes. Innumerable topics may be used; and the interest in this fanciful undertaking can, if not overdone, be used at least once a month during the eight years.

Another fruitful source of interesting material is the fund of stories of strange characters and episodes of earlier times that are to be found in any community. There are always people who know many of these anecdotes, and certain pupils may be assigned to visit them, get some good stories and write them up for the school.

Directions for playing a game or the description of a trip are of interest, if the game is a new one, or if the trip is one that the whole class has not taken. Sometimes when a new winter game is wanted, a competition may be held in which each pupil in the class describes some new game (if he knows one), all descriptions to be read carefully by the class and that one to be selected which seems most interesting. If the game is not clearly explained, that fact becomes immediately apparent to the writer.

The upholding of one side or the other of a matter under class discussion furnishes the pupil with a strong motive for effective writing, because he is anxious to convince his

opponents. The writer is interested; he knows that the opposition is interested, but cannot have the facts, or it would not be in opposition. He sets to work enthusiastically, therefore, to talk on paper.

Imaginary stories are in many cases very interesting. I well remember the wonderful and weird stories that my chum and I, as boys of eleven, used to make up for fun, spending hour after hour upon the exercise. There was no halting in our language or our imagery. Many people tell me that when they were in the grades they had a desire to write books and stories and would frequently begin on them. More children than we suspect have this same interest in imaginary stories. That interest should be utilized to its full extent.

These are a few suggestions for teachers, and within them the teacher can undoubtedly find material enough to keep his pupils supplied for a term of years.

Summary. Interesting topics may be secured by dressing reproductions in new clothes, through letter writing, through the suggestion of superlative and other unusual experiences, in fanciful autobiographies, in local historical episodes, through debates and imaginary stories.

An Interested but Ignorant Audience. In order to be thoroughly interested himself, the writer has to feel that his audience is interested, and that he can tell the group of persons to whom he addresses himself some things that they do not already know. Missionaries are impelled by exactly this idea. They have something that the heathen do not know, and until the audience shows interest, it is very hard for the missionary to keep on talking and working. When he gets an interested audience of learners, he preaches with more than his usual enthusiasm.

An interested audience makes one do his very best. Any one can verify this. Think how eloquently you and I con-

verse when some one listens with interest to our stories, especially about that most interesting topic — ourselves.

To help the child feel that his audience does not know more than he does, it is well to have him read his composition to the class so that he will feel that they are his audience. If he does not read to the class, he will feel that his teacher is his audience, and he is not likely to feel that he can tell the teacher much. And the teacher sometimes fosters this feeling in inverse proportion to the amount he knows. If he does not know much outside the book, he tends to want to make the pupils feel that they cannot tell him much, because he is afraid that he will be found out. If he knows a great deal, he is aware of the fact that any normal boy or girl can tell him things of which he never dreamed.

There are some things, such as the principles and the fundamental facts of each subject, which all pupils expect their teacher to know, and ignorance in these matters lowers the teacher in their estimation. But in all the rest of knowledge outside the book, boys and girls not only are glad to tell the teacher things he does not know, but also admire the teacher all the more because they are able to give him information.

If a boy gets into the habit of thinking about his audience, not only will he write and talk better, but he will search among the topics he might write and talk about to find those that are both interesting to him and interesting to his audience. This will help him to keep from being a bore when he grows up; for a bore is merely one who does not notice whether what he is talking about interests his audience or not, and in the absence of his observation keeps on talking.

Sometimes other schools can be made the audience for themes as well as for letters; two teachers in neighboring

schools can arrange to have their pupils write back and forth on interesting topics of practical value. Again, ingenuity on the part of the teachers helps wonderfully in setting up what we know to be ideal conditions for good writing and speaking.

The audience can be used in a very definite way to show a pupil that he needs to correct some points, or to give him merited praise. After the pupil has read his paper to the class, the teacher can ask the class if they got the idea, or, if not, what seems to be the trouble. Harsh criticism should not be allowed, nor will it be given; for pupils, while frank, are good natured in this work. Nor is it a difficult thing to make the plan practical; a little care on the part of the teacher will lead them to be discriminating critics.

Summary. Written work should be prepared to be read to the class, which serves as an interested and not too learned audience. It is not necessary that everything written be read to the class. It is only necessary for the writer to feel that what he is writing may be read to the class.

Immediate Interest. What we have been saying in connection with an audience and a list of interesting topics is preparatory to the discussion of interest in language forms, such as punctuation, grammatical definitions, and so forth.

In this section, our query is this: How shall we get interest in all these forms of language? And the answer, in outline, is the same here as elsewhere. That is, there are three cases. Either the pupils are interested in language forms, or they are not. If they are, nothing need be done; but if they are not, then an appeal may be made to generic values, or to the specific need.

The first of these is easily disposed of. We shall suppose that they are not interested in such topics as punctuation, and therefore we must inquire into methods of securing interest.

Mediate Interest through Generic Incentives. If the pupils are not interested in language forms, we may attempt to create this interest by an appeal to such things as grades, promotion, graduation, the sense of duty, avoidance of punishment, and so forth. These motives, as we have said in the two earlier chapters in the book, are commonly used and clearly understood by the readers. The less worthy motives in the list should never be used; the more worthy should be used only when the method to be discussed below fails to work.

Specific Needs. In earlier chapters we said that the best method and the hardest to handle in securing mediate interest is to inquire into the intrinsic function of the item to be studied, and create or find situations in line with this. We know that language forms are intended to help in the communication of valuable ideas and impressions; and if we wish to create a specific need for studying any particular form, the pupil will have to see that he has failed to convey his idea, and must be made sorry for his failure.

Now this leads us to familiar ground. If we want the pupils to be interested in forms, punctuation, rules, and so forth, the best thing to do first is to let them write on interesting topics, as first outlined above. Then if they become aware of the fact that their audience is not understanding what they are talking and writing about, they will be ready to remedy their defects and cure their errors. This brings us back to the second point — the correction of the errors that arise. If pupils are interested in writing compositions and papers, they will be glad to correct errors, especially if they see clearly that the errors keep them from being understood.

Errors we have discussed in each of the two preceding chapters. The new point we stress here is that we must have the children interested in the topics upon which they

write, and we have illustrated in part what these topics may be. I have no fear of the ultimate writing and talking ability of pupils who write and talk for an interested audience upon interesting topics, provided they have a teacher who has a fine sense for correctness, who uses each practical occasion to teach them the correct form in place of their errors, and who shows them the easiest way out of their difficulties.

Summary. Pupils either are interested or are not interested in language forms. If they are not, then an appeal may be made to generic values, or to specific needs. In the latter case the important thing is to have the children interested in what they write, and to have their errors corrected as they occur.

Desire for Improvement. Just as in spelling and handwriting, so in language, it has been found possible to stimulate the pupils to work upon their own errors. If they can measure their progress, the stimulation will be still more keen. This measurement of progress is not particularly difficult, at least in some of the phases of the work. For instance, in punctuation, and capitalization also, it is easily possible to have the children write a composition of which the first hundred words are selected, and the number of errors in, say, periods, question marks, and capitals noted from week to week and from month to month. These home-made tests are very easy to make. The children are glad to see that they are making an improvement, if they are. In oral speech it is more difficult to compare the number of errors made by a pupil at one time with the number made at another, because he may not, at one time, use the same words that he uses at another, and so may not make the same mistakes. But even in the case of oral language the teacher may occasionally set aside a part of the school day or listen at intermission and actually keep tally on the number of mistakes that he has

heard during the stipulated time. Undoubtedly the teacher who is anxious to record the skill of children can find many home-made devices for doing this, even if he is not in a position to obtain the standard tests.

Mass Assault. One of the most serious difficulties that the teacher has to face in securing results arises from the fact that the school is not with the teacher in the desire for improvement in the use of speech. It frequently happens that boys who have a feeling for good speech and would like to use it are afraid to do so because other boys will say that they have "swallowed the dictionary," which is, of course, one of the most heinous of small boy offenses. This means that in such a school what I call a "mass assault" should be made upon the problem of correct language. The morale of the whole school must be raised before anything can be done with individuals. This calls for real leadership on the part of the teacher, who can handle it through conversation, campaigns, and his own example. If he is a stimulating leader of the group he will get everybody with him; if he is not, his teaching of language will be merely tolerated. Specific directions about how to accomplish this are difficult to give because it is a psychological matter and depends upon the relation of the teacher to the children. If he sets out with the determination to sell them the ideal of good speech for business, social, and artistic reasons, he will have to be sufficiently resourceful to find methods of convincing the children that what he wants is right. Certainly he must be strongly interested in the proposition himself and must be facile in convincing his group.

Correlation. The other subjects in the course of study are related to language in two ways. They provide some of the content for language lessons and furnish a place in which the language rules may be applied.

We should certainly be familiar by this time with the

fact that a teacher's success as an instructor in spelling, writing, grammar, and all forms of language is to be judged by the natural everyday language of the pupils in connection with their life outside the language class. If a teacher tolerates bad language forms in any other class, that teacher is not a good language teacher.

In the rural schools, where time is so valuable, the great bulk of the language work must be done incidentally in connection with other subjects. This is, of course, true of city schools as well, except that in these the teacher has much more time for special language classes than has the teacher in the country; and, consequently, since the rural teacher has less time for special classes, the greater part of the teaching of language must be incidental.

We have spoken about the danger of using material taken from the other school subjects for work in the special language class, pointing out the likelihood of the pupils' feeling that all the rest of the class know the material and of there being, therefore, little interest or motive for writing. I refer to it here again to emphasize the important point made above; that this lack of interest may be obviated in great measure if, in the reproduction, the teacher arranges to have the reproduction solve some problem, or answer some interesting question, instead of taking the form of a prosy résumé. If this is done, reproductive work is good; if it is not done, it is an abomination to boys and girls, and detrimental to language work.

Summary. Language is essentially a subject to be taught in correlation with other subjects, particularly in the rural school where time for special classes is so short.

3. Methods of Language Study

In the effective study of language forms it is important that students should be interested and that they should

feel considerable freedom in writing. The first of these we have discussed a great deal in the past few pages. The second has been partially discussed already.

Freedom. To get pupils to feel free in their writing, three things are necessary. In the first place, they must have an opportunity to write their thoughts just as they occur to them without being bothered about ink spots or legibility. That is, the teacher should allow a first and second draft. This we have already discussed. In the second place, the teacher must praise good work even more than he censures poor work. John is not to be judged by the standards of Shakespeare or Emerson. He is just an average ten-year-old boy. Adverse criticism should be given, but it should not outweigh praise when effort has been put forth. For the boy who is praised for good work will grow proud of it and will take criticisms with intelligence and good grace. In the third place, the teacher should not mark every error. Judged by absolute standards a third-grade pupil may have twenty mistakes on a page, while an eighth-grade pupil has only three, notwithstanding the fact that the eighth-grade pupil is better able to stand up under twenty corrections than he was in the third grade. So, instead of burying the third-grade child under a mass of corrections, the teacher will do well to mark only those errors which the pupil is able to correct by the rules *already learned in class*. If one moves slowly and has patience, and is not too greatly concerned about temporarily passing over errors, he will win out in the end through careful attention directed to errors one at a time.

Socialized Recitation. Into current literature has been introduced recently the term "the socialized recitation." Much has been written upon the subject and detailed directions are given for carrying it on. Although when one reads the literature it appears to be a rather formidable

method, in essence it is very simple and easy of application. What it means is this: In the socialized recitation the teacher talks the proposition over with the children and gets their ideas on how to carry it out. In ordinary class-work, on the other hand, the teacher stands in front of the children and tells them what to do or asks them questions about what they have done. In the socialized recitation the teacher becomes one of the group, a sort of chairman of the group, and talks things over with the pupils. Sometimes the teacher formally organizes the class into committees on a project. For instance, in a seventh-grade lesson on the use of the dictionary, there might be a committee on speed, another on spelling, one to look after the accents, another syllabication, and so on, although organization into committees is not necessary. The success of the socialized recitation depends upon this — the teacher gives the children an opportunity to think out plans for themselves as a group instead of laying down the law to them and telling them exactly what to do. For instance, the problem of correcting *seen* and *saw* would become a socialized recitation when the teacher laid before the children this problem: "*Seen* and *saw* give us a great deal of trouble. Now what had we better do about it?" This puts the question squarely up to the children and their ideas are called for. Perhaps they have a half-dozen suggestions. These are discussed and weighed and perhaps all the suggestions are accepted and the teacher says, "Now, who will look after this?" The answer to that question will decide the next step. In the socialized recitation the teacher puts the proposition up to the pupils and gets their help. In that sense he is like the chairman of a committee. His business is to get all the members of the committee to work. But while he is chairman of the committee he is also the referee and judge.

Summary. In brief, the socialized recitation is a device used by the teacher for the sake of getting the children to think for themselves by facing them with problems and eliciting their suggestions for solution.

Drill. Naturally, drill plays a very important part in language work. Usually the problem is to get pupils to substitute good habits for bad, but in some cases the problem is that of setting up new, good habits.

As we have seen before, the first point necessary is to have a clear initial impression. The second is the securing of attentive repetition, the third is the continuation of this repetition until habit becomes automatic, and the fourth is to see that the children like it. When Willie Smith, who as yet has not studied grammar, says, "He don't know," one way to handle the case is to say at once, "Willie, you must say, 'He doesn't know.'" This Willie may do, but in addition it is wise to save this point for the class recitation and spend enough time on the subject to make it clear. Several sentences may be put upon the board — thus:

I don't know	He doesn't know
You don't know	They don't know

If the class understand grammar the teacher can talk about third person singular agreement, etc., but if they have not studied grammar the pupils may repeat these short sentences noticing that "He does" is always used. It may be amplified by the following inductive process: "The boy does not go." "The man does not want it." "The girl does not like to go." "Boys do not go." "The men do not want it." "The girls do not like to go." These may be shortened into: "The boy doesn't go." "The man doesn't want it." "The girl doesn't like to go." "Boys don't go." "The men don't want it." "The girls don't like to go."

Language games are being widely used, and Professor

Paul and I have collected a large number which are published by the U. S. Bureau of Education as Bulletin No. 43, 1923. These were collected, through the Commissioner's office, from all over the United States.

Speed exercises have also been worked out as found in several textbooks. Sometimes these take the form of alternative exercises as, "He (don't, doesn't) go," "I have (seen, saw) him." Occasionally completion exercises are used, as when the pupils are asked to insert the right form *seen*, or *saw* in the following sentences: "I — him yesterday." "I have — that before." Or the true-false practice test may be used. In this case the children are told that some of the sentences are right and some are wrong and are asked to give the correct form. Here sentences would appear like this: "We went to town," "He gave it to her and I," "He don't look well to-day," and the children would be asked to correct the incorrect ones.

When such exercises are being used it is important that the children go over them very rapidly because automatic and glib use of correct forms is absolutely essential. If the children have to stop to think, they are inclined to become confused.

Correction. In language work it is necessary that, on the one hand, the pupil be sensitive to errors and that, on the other, the teacher and the rest of the class should correct him. Just how to do this so as to keep from wounding the sensibilities of the child who makes a mistake is a somewhat serious question. In the first place, the idea must be sold to the class that when corrections are made they are made in good faith and for the benefit of the one who is in error. The spirit must be right. In the second place, the prigs in the class should be curbed so that they will not sit through the recitation watching for mistakes like vultures

circling around waiting for a man to die — if such a ghoulish comparison may be permitted. In the third place, the mistakes should not be caught up, usually, until the child has finished what he has to say. Otherwise the thread of the recitation is broken, unless the error is one that has already been drilled upon and by an inconspicuous gesture on the part of the teacher the pupil can catch the slip immediately and proceed with his statement. In brief, errors must be called to the attention of a person if he is to correct them, and this must be done by himself, by his classmates, and by the teacher, but it must never be done in such a way as to hurt his feelings or disturb the recitation.

In the last analysis the judgment of the effectiveness of language work is dependent upon the question, "Did I get my idea across in good shape?" No matter how correct the expression may be in form, the audience has to be taken into account in deciding upon the effectiveness of speech. If the idea did not get across, then the second question raised is, "Why not?" The answer to this question will show the points at which the delivery did not reach standard. But if the answer is "Yes" or "Yes, in some respects," and the question "Why?" is asked again, the answers indicate the point at which the standards have been reached with reasonable success.

Language Projects. Language touches projects in two directions. Language is used in many other projects. Whenever children have to describe or explain or record anything in connection with a project in geography or civics or art, language becomes a part of the project. But in addition to this, there are such things as language projects, and to put our fingers upon these we need only to look for natural situations where language would ordinarily be used in some other way than as a mere assignment. For instance, letter writing may become a project when the

teacher says, or the pupils suggest, "Wouldn't it be a good idea for us to write a letter to Tom while he is in the hospital?" This is a project because it would be the normal thing to do between friends in connection with letter-writing, outside of school. The socializing element can be used by the teacher's turning back to the class and saying, "Well, how shall we proceed?"

In selecting projects there are a number of devices. The simplest of all cases, according to Hatfield, is that in which the teacher calls attention to a situation which calls for action, such as writing a letter to Tom. Other timely occasions for letter writing and composition work may come to mind. Perhaps a drinking fountain is needed, or a larger gymnasium class. Or possibly the citizens are indifferent about the school because they do not know what is going on. Again, the school team may lack support. Perhaps pupils will be interested in knowing a list of good books. Or contributions to local papers can be made. In addition to this, as Hatfield again points out, we can base projects upon the children's natural desire "just to want to talk." They may have a good joke they want to tell, may want to describe a beautiful scene, bring in an anecdote, or even make up stories to tell.

One of the most important projects that the children can work upon is that of the improvement of their own speech. They can devise numerous ways and means for doing this. They can take charge of the plans, judge of the results, and carry them through as described above in the paragraph on the socialized recitation.

Summary. In searching for projects, the teacher will look for situations in which children would, outside of the fact that they are studying language in the language class, normally use oral or written language as a means of carrying out the things they want to do.

Alternation. If grammar is taught in the eighth grade only, language may alternate in the sixth and seventh grades, and in the fourth and fifth grades. Below the fourth grade, if there is any class that is called a language class, the differences in the development of the pupils are so marked that alternation is not advisable. If grammar is taught in the seventh and eighth grades, it is possible to alternate in those grades. The fifth and sixth may alternate, and possibly the third and fourth. But the best plan for alternation is the one first mentioned — teaching grammar only in the eighth grade and grouping grades four and five, and grades six and seven, for the purpose of alternating in language.

REFERENCES FOR CLASS READING

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- *BETTS. *Class-Room Methods and Management*, pp. 188-216. (Language material.)
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- *CHARTERS and PAUL. *Games and Other Devices for Improving Pupils' English*. Bureau of Education Bulletin No. 43, 1923. (A collection of corrective games and exercises gathered from all over the nation.)
- COOLEY. *Language Teaching in the Grades*, pp. 5-48. (Language and literature.)
- *HOSIC. *Teaching the Elementary School Subjects*, edited by Rapeer, pp. 111-31. (Several good detailed suggestions.)
- *KENDALL and MIRICK. *How to Teach the Fundamental Subjects*, pp. 69-111. (General.)
- *KLAPPER. *The Teaching of English*, pp. 130-59. (Vitalizing English composition.)
- *MCGREGOR. *Supervised Study in English*. (A rich collection of suggestions for teachers, particularly concerning the socialized recitation.)
- MAHONEY. *Standards in English*. (A course of study in detail for each grade, with many detailed "hints and helps.")

CLASS QUESTIONS

1. Study carefully the oral English of a class in the grades. Which of the errors coming under the headings listed in the preceding pages

- do these pupils make most frequently? What additional errors seem to be common?
2. Work out a detailed program of what you would do to correct these errors.
 3. Make a list of language projects for the class, including selections from those mentioned in the chapter and supplementing these with others which you think would probably be interesting.
 4. How does the socialized recitation differ from ordinary class recitation? from committee work? Can the inexperienced rural school teacher use the socialized recitation effectively? Give your reasons.
 5. Give five examples to show that by a slight rearrangement in the order of words, a grammatically accurate sentence may be made more effective.
 6. You, as a student, undoubtedly use a first draft in writing anything important. Is it neat? Should any standard at all be set for neatness for yourself? For pupils?
 7. What are the arguments in favor of your using a textbook in language work?
 8. What are the weaknesses connected with the use of a language textbook?
 9. Suppose you ask a class of country pupils to write a "composition about a cow," and find that the pupils have written about twenty or twenty-five words. Why didn't they write more? Give five different topics on this same subject that would produce more interest and result in better compositions.
 10. What are the weaknesses in using reproduction work as a basis for compositions? How can these weaknesses be obviated?
 11. Give instances showing the loss of interest in a subject (1) because the audience did not prove to be sympathetic, and (2) because it turned out that the audience knew as much about the subject as did the speaker.
 12. Name the most interesting things that you think you could write about.
 13. Is a teacher justified in showing a seeming interest in everything the pupils say, when in reality she is not interested? Why?
 14. Suppose you were going to fit language instruction to the errors of the class. What would be five topics you would take up with the class you are now in?
 15. Should a teacher who does not use grammatical English be given a certificate to teach? Why?
 16. If such a rule were made and enforced, who among your friends would be eligible on that point?
 17. Do you think a teacher could get along without a special language class in a rural school where time is important, if he paid attention to the language of the pupils and corrected it in the other subjects? Why?

CHAPTER IV

GRAMMAR

1. Subject-Matter

The Function of Grammar. The difference between the purpose in teaching language and that in teaching grammar is this: In language when we correct grammatical forms we merely teach the correct form, while in grammar we explain why it is correct. It is therefore apparent that grammar is studied, from my point of view at least, merely as an adjunct to language, and that all that has been said about errors of language applies to grammar and need not be repeated.

Some people become quite heated when they discuss the function of grammar, because there are such radical differences of opinion upon the subject. One group of people says that the function of grammar is to enable one to speak correctly; to train boys who say "They ain't" to say "They are not," and to explain why the latter is correct. But another group asserts that grammar is studied to explain the structure of English. Grammar, say these advocates, is a science that helps us to understand the sentence, to know why we speak as we do; but as a science it is not concerned with the art of speech. For a science and an art differ in this, that a science helps us to understand, but an art is concerned with doing. The science of human speech explains why we speak as we do; the art of human speech, speaks.

These two groups of people quarrel constantly. The scholarly grammarian who likes to study grammar holds

that it is a science and is not concerned with making people speak correctly. Many teachers hold the same view and make no attempt to apply the rules of grammar to the speech of the children.

The other group holds that a university graduate or a high-school graduate may be justified in studying grammar merely as the science of speech, because every man has a right to study anything he likes. But the members of this group say also that the only excuse for teaching grammar, at least in the elementary school, is the improvement of incorrect speech. These opponents claim that there are a great many things of more importance for the boy and the girl in the grades than a little knowledge about such a very abstruse and difficult subject as grammar, unless it is to be used in making pupils use correct English.

I belong to this second group. For I see little use for the study of grammar in the grades except as an aid in correcting speech. But to make the whole position clear, let us approach it from another angle.

As you remember, the function of spelling was to arrange letters in words. The function of grammar is to explain the relation of words in a sentence. With the order of letters in words, grammar is not concerned; it investigates the relations of words in sentences. These relations are given such names as subject and predicate, noun, verb, phrase, etc.

If grammar studies the relations of words in sentences, some boy with a dislike for the subject may ask the use of knowing about the relation of words in sentences. Why study about nouns, pronouns, predicates, and verbs?

Two answers are usually given. One of these says, If you use incorrect forms, educated people will make fun of you. This ridicule is not always expressed by a smile or a laugh or by a spoken word, but it is registered inside. The person

who knows better and hears a mistake in grammar notices it even if he does not make any sign. He says to himself, "This person is a rather crude or careless individual." Many teachers fail to get high positions because they make grammatical mistakes. Sometimes a teacher makes more mistakes than his pupils, and then the pupils make fun of him and he loses his influence.

Since, however, ninety-five per cent of all children and teachers come from homes or communities where incorrect English is used, nearly every one has before him the long, hard task of overcoming habits set up in early life before he studied language and grammar in school. In fact, it is not an uncommon experience to hear university professors make mistakes in grammar, not because they do not know better, not because they do not try hard to speak correctly, but because when they were little boys they lived with people who spoke ungrammatically and from whom they learned wrong forms. Such people are exposed to the ridicule of those who notice the error, and the only way in which they can cure themselves is by eternal vigilance and the study of English grammar.

The second reason for studying grammar is that we may know how to select the correct forms. For instance, Willie Roberts is in the habit of saying, "Him and me is going." Teacher corrects Willie over and over, in the class, telling him that he should say, "He and I are going." But Willie is corrected so often that after a while he reaches a condition in which he is unable to remember which of these expressions is right. Here, say the practical people, is where grammar helps. If the boy learns the case forms of the pronouns and the rule for the agreement of subject and predicate in number, he need not depend upon a hazy memory for a correct form, but can work it out for himself. If he knows that the nominative case for *him* and *me* is *he* and *I*, it will then be

easier to remember which is correct. Herein is the essential reason, it seems to me, for the study of grammar in the grades. It shows the speaker how to select correct forms for himself.

In baseball the best managers tell their players to obey the rules of the game on every occasion. The players may feel that they can break the rules of the game once in a while and gain by it — a player may run from first to third, cutting out second, and “get away with it” when the umpire’s back is turned. But the manager will not allow it because he knows that, in the long run, if one does not follow the rules, the game will punish him.

Just so in grammar. I may say, “They ain’t,” “It’s me,” “Him and I,” and so forth all the time and have people understand me; but I am breaking the rules of correct speech in the talking game, and every once in a while I am sure to be misunderstood. My percentage of effectiveness will not be so high as it would be if I followed the rules. My ideas will suffer by virtue of my carelessness.

Summary. The function of grammar is to assist in the accurate conveyance of ideas to others by giving due regard to the relations of words in the sentence. We use correct forms in grammar so that we may be understood and so that educated people cannot belittle our training. While grammar may be studied for itself alone in higher institutions, its only justification in the elementary school curriculum is as a first aid to injured speech and broken grammatical rules.

Ideals. Four ideals need to be developed in connection with the teaching of grammar. (1) Accuracy is essential. If the student has the ideal of accuracy he will learn the rules and definitions and in parsing and analyzing he will get the material correct. (2) Speed is the second ideal. As will be pointed out elsewhere, unless children learn to parse words with great speed, the study of grammar is not of great value. If the child is going to make use of grammar

at all in deciding which forms are right and which are wrong, he must do it almost automatically while he talks. (3) The student must develop a sensitiveness to incorrect forms. Frequently children make mistakes without knowing that they are mistakes. (4) Following immediately upon this is the ideal of persistence in correction. Pupils frequently know the correct forms but grow careless or discouraged about using them constantly.

The Teacher's Objectives. There are four objectives which the teacher should have in mind in the teaching of grammar. (1) He must develop a liking for grammar, if it is to be used. (2) The teacher must see that the children use their grammar in the correction of mistakes. The definitions, of course, are learned in order to understand the rules. Definitions are not broken, but whenever a rule is broken, the children should be shown how the memory of the definition helps them to correct the error, or, better still, keeps them from making the error. Exercises should be given to children and their errors should be examined, both for the purpose of giving them facility in using grammar and as drill in correct speech. Many children can pass a good examination on grammar and be totally unaware of the fact that it has anything to do with the everyday mistakes which they make. (3) The teacher must develop skill, both as to speed and accuracy, particularly in parsing and analysis. (4) Finally, the successful teacher will see that the children use reason as well as memory in grammar. The inductive method, which is developed in the latter part of the chapter, may be used with excellent results in the teaching of rules and definitions. In parsing and analysis the problem method of attack should be used.

Errors and Difficulties. When we come to a consideration of the errors which we use as a basis for the teaching of

grammar, we find them the same as those in language. Children make mistakes other than grammatical errors in language, but from the language errors we select those which break grammatical rules. The errors that have been discovered were discussed in the chapter on language.

The children, however, have difficulties in the learning of grammar. Of these there are at least four. First, children may not learn grammar efficiently because they may be poor silent readers. They may not understand the vocabulary or may learn it in a very hazy and indefinite way. (2) They may be very slow in their parsing, analyzing, and the exercises of grammar. (3) They may not reason accurately. (4) They may not have any of the foregoing faults and still fail in the use of grammar because they do not apply it to ordinary speech. These errors have to be taken into account in the teaching of the subject.

Standards. Two standards are set up by the two opposing sides in the debate over the teaching of grammar. One group says that a student has a good hold on grammar if he can analyze and parse with ability and accuracy. The other group says that it does not matter how well a person may be able to analyze and parse; he has little hold upon grammar if he does not speak grammatically. One party sets up a scientific standard, the other an artistic standard.

Which of these two is right, and under what conditions one or the other may be right, matters little to the grade teacher. For him there is only one standard that should satisfy. It does not matter how well his pupils can analyze and parse, if they use ungrammatical language. Unless they speak accurately, their knowledge of grammar is just so much chaff.

This is a difficult standard to attain for three reasons. *First* in importance, the pupils have heard ungrammatical language all their lives and have had habits firmly fixed at

home and among neighbors. *Second*, the teacher has the pupils not more than six hours out of the twenty-four, and during that time the average boy or girl does no more talking than he does in ten minutes outside school. So the teacher has very little opportunity to help him by reiteration upon the same errors over and over again, day by day, precept upon precept, and line upon line. In the *third* place, in many communities, if pupils should use correct forms they would be laughed at by the neighbors as "smart alecks" and would be dubbed "stuck-ups." To bashful country boys and girls this is a penalty so biting that it takes great confidence in a teacher to overcome the handicap.

Summary. There are two possible standards for judging the hold a pupil has upon grammar. One is skill in parsing and analyzing; the other is ability to speak grammatically outside the grammar class. The latter is the practical working standard by which a teacher may justly judge of his ability as a teacher.

Structure. We have stated the specific function of grammar as that of assisting in the communication of valuable ideas by attending to the relation of words in the sentence. Such being its function, it is interesting to note how the sentence is organized to convey ideas with increasing accuracy. There are eight parts of speech, and these are arranged around a subject and predicate. By these few elements all spoken thought is expressed. No matter what one wishes to say, he must use some of the eight parts of speech.

It is a remarkable fact, when one thinks of it, that little children express a whole sentence in one word. Two-year-old Mary says, "Milk," and means, "Give me some milk quickly"; or she says, "Hot," and means, "This stove is hot; so I had better be careful." All her sentences are single words, and yet they express ideas.

Grammarians tell us that, in all probability, when people began to use language, hundreds of thousands of years ago, they used single expressions for whole sentences, just as children do now. They did not employ subject and predicate, noun, verb, and adverb.

We have that same sort of sentence now in the interjection. When I hit my finger with a hammer, instead of using a long and accurate sentence, saying, "I have hit my finger with the hammer. It hurts, and I am very angry," I say, "Ouch!" This expresses the idea.

The important point is that this single expression, which primitive men used, cannot be very accurate. So the sentence grew, just as it does with children. After the baby says, "Hot" for a while, she may say, "Stove hot," or, "Milk hot," which is more accurate than is "hot" alone.

As time went on, each generation tried to be more accurate, and so new elements were added to the sentence to make greater accuracy. Of these cases let me give a few examples. For instance, the adjective lends accuracy. I might say, "Buy me a hammer." But if I may use adjectives, I can say, "Buy me a very small tack hammer." This gives greater accuracy by making the noun more definite. The tenses make the verb more definite. If we had only one tense form we could not tell whether our friend has been married, was married, is married, is being married, will be married, or will have been married sometime. Little children are not able to express these fine shades of meaning until they have learned the tense form.

Many grammarians have made a classification of all the parts of speech and all the forms that each part of speech undergoes in expressing exact shades of meaning. They differ among themselves in little details, but, in the main, they agree on the chief modifications.

The following is a classification of the noun, which may be accepted for purposes of illustration:

Classes: Common, Proper.

Properties: *Gender* — Masculine, Feminine, Common, Neuter.

Number — Singular, Plural. *Case* — Nominative, Objective, Possessive.

The important fact to remember is that each of these items helps to make the communication of ideas more accurate. Take, for instance, the two classes of noun. Evidently it is sometimes of advantage to be able to say, "John is going to the city," rather than to say, "A man is going to the city." The proper name makes for greater exactness by designating that particular member of the group who is meant.

In like manner sex is a very important consideration in all life. It is fundamental, and people have to take it into constant consideration. It is, therefore, in the interests of accuracy to have separate forms for each sex. It is more accurate to say, "Men are hearty eaters," than to say, "Some people are hearty eaters." *Boy* and *girl* are more definite than *children*. These examples are given to illustrate how every form and part of speech has a different work to perform in helping people to be more accurate in what they have to say. And if one takes all the forms of all the parts of speech, he can show that the same principles hold true everywhere in grammar.

Summary. The sentence has been developed in the history of mankind and is developed in the case of every child from a single word, which expresses an idea inaccurately, to the very complicated, but more exact form in which adults to-day use it. Every grammatical form which has thus been evolved has a definite work to perform in producing this result.

Parsing and Analysis. Parsing and analysis are not intricate and mysterious processes. Their business is to state the relations that exist between words in the sentence.

Analysis takes the sentence and dissects it, or breaks it up, into its component parts. For instance, in the sentence, "The King of Spain may come to America in June," analysis proceeds to state subject, predicate, modifiers, etc., as follows:

Kind of sentence — simple, declarative.

Subject — King.

Modifiers — (1) the, (2) of Spain.

Predicate — may come.

Modifiers — (1) to America, (2) in June.

Here the sentence is broken up into its smaller groups, and the relationship of each is shown. These groups are sometimes phrases, as *of Spain*, *in June*, etc. They may be clauses, as in complex and compound sentences; and, of course, they may be single words, as *King* above.

Parsing simply carries this process one step further. In an analysis we make a rough dissection, while in parsing we make a minute dissection showing the exact relationship of each word in the sentence. For instance, in parsing the sentence given above, we would carry it through in a thorough-going manner by beginning with *The* and taking up each word as we went along.

For the one who is to parse every word, analysis is just the first step in which the words are roughly sorted into groups ready and waiting to be sorted more carefully in the parsing process.

Diagramming. In analysis and parsing, people sometimes use devices when the matter is to be put upon paper. When I was taught analysis, I used the form that I have just given above. Other people use other devices, and a great many have used and are using diagrams.

Strong objections are urged against diagramming; but it is a handy device when used in moderation. It saves time. I shall give no advice upon the kind of diagram to use,

except to say, first, that it should be as simple as possible, and second, that it should not be used exclusively. For the ideal for which we should strive is to be able to analyze mentally as we read along. In so far as analysis is carried on, it may be diagrammed, or given orally, and sometimes it should be written out after a form similar to the one given in connection with the sentence above. Care should be taken to see that no pupil uses the diagram mechanically or juggles with the form without understanding the process.

Summary. Parsing is the process by which we state the relation between words in the sentence. Analysis is the first step in parsing, in which the sentence is broken up into groups of words preparatory to parsing. Diagramming is a device for saving time in analyzing and should be used, but with reasonableness and care.

The Course of Study. There are two important questions to consider in dealing with the course of study in grammar. What grammar should be taught and when should it be taught? Opinions differ as to what amount of grammar to teach in the grades. One well-known writer asserts that it would be wiser not to teach grammar and to throw the whole emphasis upon language. On the other hand, many textbooks in grammar contain a very complete statement of grammatical facts and set up the ideal of teaching the children how to analyze any sentence and to parse any word in it.

For the beginning teacher the amount of grammar to be taught is largely determined by what is contained in the textbook that he happens to use. If the text has just a few facts, then only a few facts are taught. If the text is full, a full list is taught. Teachers do not omit much, because they think that what is to be learned afterward depends upon the previous lessons and that therefore if anything is missed the pupils will fail to understand what follows. The teacher has to depend upon the text to a

considerable degree, but to not nearly as great an extent as many of them think. It is entirely practicable to omit many of the parts of the text in grammars which have too many minor facts in them.

The first thing to do in finding out what to teach is to find the common errors made in the community in which you teach, and the second thing to do is to pick out those parts in the grammar which will explain how to correct these errors.

Upon such a basis as this a course of study has been constructed which seems to hold for all parts of the country, so far as grammar is concerned. It is rather apparent from the extensive studies made that children break about the same rules in all parts of the country. Variations in speech are usually variations in idiom or pronunciation rather than in grammar. The following facts of grammar are found in this list:

Nouns.

Common and proper to help in capitalization.

Singular and plural number of importance.

Possessive case and perhaps nominative and objective for assistance in the study of pronouns.

Gender, chiefly because of errors of agreement of pronouns.

Pronouns.

Kinds: personal, demonstrative, interrogative, indefinite and relative.

Personal pronouns are very important; case, gender and number.

Compound personal pronouns.

Relative pronouns are also very important; case, gender and number.

Adjectives.

Pronominal adjectives.

Proper adjectives for capitalization.

Comparison of adjectives.

Verbs.

Kinds: transitive, intransitive, and copulative.

Person and number. The latter is particularly important.

Tense is very important.

Can and may, shall and will, lie and lay, sit and set.

Mood is not important.

Voice is not important.

Adverbs.

Comparison of adverbs.

Distinction between adjectives and adverbs.

Prepositions.

Conjunctions.

Misplaced modifiers.

Double negatives.

Syntactical redundancy.

Sentence structure.

The characteristics of a sentence to the extent that the children know a sentence when they use it, and know how to punctuate it.

Compound, complex, and simple sentences.

Parsing and analysis.

Those facts about each part of speech should be included in parsing and analysis which are included under each above.

This course of study does not include many of the more difficult items which are usually included in a course in grammar. For instance, it includes no treatment of participles or infinitives and little of mood and voice. However, the supporters of this point of view hold that since the children do not make errors in the use of these elements it is unnecessary to teach them. It, moreover, lays more stress upon false syntax than has recently been the case because it implies that the children ought to work with the incorrect forms in order to correct them. This is an interesting and valuable point of view, for a fuller description of which the reader may consult the *Sixteenth Yearbook*.

Summary. The course of study in grammar should be composed only of the very simplest facts, and particular attention should be paid to those parts of the grammar that explain how to correct common errors and give the reasons for the correct forms.

When Should Grammar Be Taught. The question of the time to begin teaching grammar depends upon the diffi-

culty of the grammar. We teach grammar when we explain why we use certain forms in language. Since it is possible to use correct forms without explaining why they are correct, it is possible to teach language without grammar. When the teacher says to the pupil, "Do not say, 'He don't,' but say, 'He doesn't,'" he is teaching language. But when he makes the pupil understand that he should not say, "He don't," because the verb must agree with the subject in person and number, he is teaching grammar. Our question is, therefore, "In what grades shall the teacher begin to teach the terms of grammar so that the pupils can explain why certain forms are correct while certain others are incorrect?" Opinions and practices differ. Some writers advocate the beginning of grammar in the fifth grade, but most writers to-day think that the seventh grade is best. Grammar is so difficult to understand that the children need maturity to comprehend it, and it frequently happens that where the children study grammar in the fifth and sixth grades they misunderstand it so completely that when they come to the seventh and eighth grades where they could understand it they are hopelessly confused with what they have learned so incorrectly and vaguely. Grammar at best is a difficult subject for even the seventh- and eighth-grade children and it is better to have them start fresh in the seventh grade. However, it is quite clear to experienced teachers that a knowledge of some of the parts of speech such as nouns and pronouns can be taught in the sixth grade.

Standard Tests. A few standard tests have been worked out for grammar. One of these was developed by the writer in conjunction with the diagnostic language tests which were mentioned in the last chapter. The grammar tests differ from the language tests in one respect. In the latter, children are asked to correct certain errors. In the

former they are asked, in addition to this, to indicate which of the list of rules given in the test should be used in explaining the correction which they made. Starch has a test for the recognition of parts of speech and Kirby has one for the application of rules. Details about obtaining these can be obtained in the reference to Monroe given at the end of the chapter.

2. Interest

Immediate Interest. The same classes of motives that work in spelling and penmanship will work likewise in grammar. Children may be interested in grammar just because they like it for its own sake as a subject to study. That is, they may have immediate interest in grammar. Or they may not like it, in which case any interest that they have must be mediate. In getting interest there may be an appeal to generic values, such as grades, approbation, and so forth, or to specific needs for the subject, depending upon its function. These possibilities we shall take up one after the other.

The most striking fact about grammar is that almost every child dislikes it, and this is true particularly of the boys. It is one of the "hard" subjects for children; and only by the greatest effort can they be made to study it through an appeal to grades, force, or detention.

. Why do we find such a deep-seated and far-reaching dislike to the subject? The answer is easy. It is not because grammar is *really* uninteresting, but because the book and the teacher take grade children into the subject too far.

Let me find an illustration to show how taking a person into a subject too far kills interest. A little boy of fourteen was very fond of learning about botany. He read all the stories about flowers and plants that he could find in the *Youth's Companion* and used to ask his friends for more.

But when he studied botany in the high school, all his interest disappeared because they gave too many Latin names and talked too much about cells, cytology, and other little things for which he could see no use. A young friend of mine was very fond of dabbling with water colors till he had to take painting in school under a teacher who taught him so much about perspective and masses and details that he could not have any fun in painting.

Grammar would be as well liked as any other subject if the pupils were not rushed into hard examples and artificial distinctions. Keep the boy in the simple forms and give him simple analysis and parsing, and he will not dislike the subject so much as he does now. Liking at the expense of too great simplicity is not to be advised; grammar should not be made too easy, because, if it is, the boys will not like it. It ought to be hard *enough*, but no harder; and it is now very hard for seventh- and eighth-grade boys. Unfortunately, teachers have become so used to its difficulty that if they made it so simple that they were ashamed of its simplicity, it probably would not even then be quite simple enough.

Mediate Interest. If, after every effort to make grammar as simple as possible, it should still remain uninteresting — not liked for its own sake — we have recourse in school to certain generic values, which we have discussed in earlier chapters. These incentives are the same for grammar as for spelling and penmanship. If Johnnie does not like grammar, we may say to him, "You cannot be graduated if you fail in grammar," or, "You *must* learn this lesson, or —" Here we hint at some obscure punishment, which is all the more stimulating for being nameless. This is the common method of securing interest, a borrowed interest, in the subject; and, since it is common, it does not need to be discussed at length. It is sufficient to say that these

generic values are good things to use when everything else fails, but they are misused if they are used all the time.

Creating a Specific Need for Grammar through Composition. We have recourse to one other type of incentive in getting interest in grammar. We first find the intrinsic function of grammar, and then find situations in which something we want to do fails because grammar is not made to do its duty. This is just what we do in spelling and in writing.

The intrinsic function of grammar is to assist in conveying values by means of sentences and words. Whenever, because of faulty grammar, we cannot communicate accurately things we are anxious to communicate, we shall feel our inability and be willing to study grammatical forms. Whenever we want to tell something very much and get all mixed up in the telling because of poor language forms, we will study grammar.

The first thing necessary, then, is for the pupils to work on interesting material. They must see an object in their language themes and history assignments; and they need, too, to see actual cases in which people have not understood them because their grammar was incorrect.

Now, unfortunately, in school, children do not always feel that their themes and their oral reports are of enough value to make them worry any if what they write is not understood. And, unfortunately too, a lenient audience may guess at what the ungrammatical sentences mean and will not, therefore, make the child realize his failure to use correct grammatical forms. It is too bad that these are the conditions; but they are, and we have to meet them.

In the face of this situation we ought to try to make language work as interesting as possible by methods such as were outlined in our last chapter, and should try to make

not only grammar but all subjects as interesting as possible. Along with this, two or three devices for creating a need may be used.

First, even though a teacher may be able to guess at the meaning of an ungrammatical sentence, as, "We-uns wants some chalk," he may say, "There is no such sentence in any grammar. I don't know what you mean; so you must speak correctly." That is, the teacher may pretend that he cannot understand ungrammatical sentences. This, then, may become an incentive to the study of grammar; the teacher and the pupils study to find the rules that will tell what is the correct form. This has to be used with care and tact, so as not to offend parents in communities where ungrammatical language is commonly used.

Second, errors in written work may be collected by the teacher and kept on file for use in making the pupils realize their shortcomings. For instance, just before time to take up the case endings of pronouns, a series of sentences may be put on the board as follows: *Her and I, It is me, Who did you speak to?* etc. This list may be some time in the assembling. But with all of it on the board at one time, the teacher may ask, "Is *her and I* correct? Is *It is me* correct?" etc. Some pupils will know; others will have forgotten. Then the lesson will be well introduced by the teacher's explaining that to-day's lesson gives a rule for deciding which form is correct, so that the class may know and will not have to remember mechanically.

Some people object to putting incorrect forms on the board. This is wise in the language class, but there is no danger in the grammar class because at that time the rule for correcting is to be studied.

Just as fast as we can make pupils ashamed of themselves for making errors, we may hope for improvement; and in causing this shame, we may either get them to

realize that they cannot be understood, or we may fall back upon the decorative use of grammar — we may try to build up an ideal for correct speech as a means of marking us as educated people.

In many communities it is hard to get children to realize that they ought to speak grammatically; and in some cases, as was mentioned above, any one, except the teacher, who speaks grammatically is considered "stuck up." But in spite of these handicaps, the teacher who can himself speak grammatically (and I have heard in teachers' meetings some of the most ungrammatical language I have ever encountered anywhere) should strive persistently and patiently and enthusiastically to set up ideals for correct speech. This he does in language work. As a motive for grammar study he uses it when the pupils are looking for the rule that determines the correct form in any given situation.

Summary. Pupils do not like grammar because the teacher goes into the subject too deeply. If immediate interest is not present, appeal may be made to generic values, such as grades and detention, or a specific need may be aroused by making the pupils conscious of the errors in their written and spoken language. Every effort should be made to utilize this last method; and when it fails, recourse may be had to generic values.

Correlation. All that has been said about either the function of grammar, or the methods of arousing a need for it, implies that correlation is advantageous and necessary. The standard by which we judge one's hold upon grammar is the ability to speak grammatically in the composition, history, geography, and arithmetic classes. The study of grammar avails nothing apart from correlation with these subjects. Every lesson is a language lesson and, after grammar is studied, every lesson is a grammar lesson.

There is a sort of correlation, however, that is disastrous. There are teachers who make a correlation with literature by having the pupils use the literature selections as gram-

mar exercises. The most beautiful poem in the language becomes for these people nothing more than a series of grammatical forms to be parsed and analyzed. Now this is criminal. Only under one condition may grammar be correlated with literature; that is, when the meaning of an abstruse passage will be made clear by analysis, and this need does not present itself very often.

3. Learning Grammar

Grammar consists of a series of rules and definitions. This makes it a good subject for the inductive method — a method not always used in teaching grammar. In fact, it is more common to use the other method.

Telling. One of the commonest methods of teaching grammar is as follows: The topic is the definition of the adjective as a word that makes the meaning of the noun more exact.

Teacher. I have put these sentences on the blackboard:

The largest green book is on the table.

Alfred was the greatest king of England.

The words *largest*, *green*, *greatest*, are called adjectives, because they modify a noun, or make its meaning more exact. Now what part of speech is *largest*?

Answer. An adjective.

T. Why?

A. Because it modifies the noun *book*.

The other words having been taken up in the same way, the teacher gives new sentences containing adjectives, and has the pupils pick out the adjectives and parse them.

It is to be noted here that the teacher gives the definition to the pupils and then drills them upon it until they have it fully memorized.

The Inductive Method. There is, however, another way in which we may approach this subject; namely, by the inductive method. This method has the advantage of

helping the pupils to find out the rule for themselves instead of depending upon the teacher for it. The teacher does not tell the pupils, "These are adjectives because they modify nouns." Instead, by means of suggestive questions, she guides them in their thinking until *they* are able to tell *her* the function of the words.

This method is called *inductive*, because by it a definition or rule is discovered by studying some particular cases to which the rule applies. This is the common characteristic of the inductive method. For instance, I wonder what the Japanese are like. If I use induction, I study a large number of Japanese men and women (particulars) and by comparing all these I draw the generalization, perhaps, that the Japanese are a courteous race. There are three steps — *presentation of particulars*, *comparison*, and *generalization*. One always finds these three steps in induction.

Now if we apply this to grammar, we may, in like manner, by presenting particular cases, draw from them the rules or definitions for ourselves.

The first thing to do is to decide on the definition to be taught and the exact words that are to be used in it. Let us suppose that it is this:

A pronoun is a word that stands for a noun.

The next thing is to decide what the pupils already know and what they will have to be told. They do not know the word *pronoun*, but they know the meaning of all the rest of the definition.

Next let us proceed to have them find this rule for themselves with as little help from us as possible, remembering that if we use induction they must find the rule by considering particular cases of nouns and pronouns. The teacher may do this by putting on the board a number of sentences, such as these:

1. Mary went home, but Mary returned later.
2. I respect the man, but I fear the man.
3. John priced the auto, but did not buy the auto.

When this has been done, the lesson proceeds as follows:

4. Teacher. Read these sentences. Do they sound right? What changes would you make? Answer. Change *Mary* to *she*; *the man* to *him*; and *the auto* to *it*.

The teacher does this on the board by drawing a line through each noun and writing the pronoun above.

5. T. What part of speech is *Mary*? A. A noun.
6. T. *Man*? A. A noun.
7. T. *Auto*? A. A noun.
8. T. What does *she* do? A. It stands for the noun *Mary*.
9. T. What does *him* do? A. It stands for the noun *man*.
10. T. What does *it* do? A. It stands for the noun *auto*.
11. T. What does each of the words *she*, *him*, and *it* do? A. Each is a word that stands for a noun.

The teacher then writes on the board, *is a word that stands for a noun*.

12. T. Such words are called pronouns.

The teacher then writes the word *pronoun* on the board.

13. T. What is a pronoun? A. A pronoun is a word that stands for a noun.

Then follows the drill.

A word or two will suffice to explain a few points. Numbers 1 to 10 all deal with *presentation*, or the examination of the three particular cases. The question in number 11 leads the pupils to make a *comparison*; and the answer to number 11 is the *generalization*. Numbers 12 and 13 complete the generalization.

Note that the only thing told the pupils by the teacher is the word *pronoun*. All the rest is worked out by the pupils themselves. Note also that in numbers 8, 9, and 10 the teacher accepts answers that are almost identical in form with the generalization, number 11. If this is done

in each case in the presentation, it makes comparison and generalization easier.

The inductive method is used only where rules, definitions, or principles are to be studied, and where the teacher prefers to have the pupil discover these for themselves, rather than to tell them outright. It is used by good teachers frequently when there is time and the rule is not too difficult to discover. All young teachers should experiment with this method to see how often they can use it successfully.

The Developing Method. In the lesson on the pronoun just given, we illustrated both the inductive method and the developing method. "Inductive method" is the term applied to the process of discovering general facts by observing and studying particular cases. The term, *developing method*, is applied to the method of questioning by which the teacher, telling only as much as is thought advisable, leads the pupils to discover things for themselves. In the foregoing lesson nothing was told except the name of the pronoun, which could not be drawn from the pupils by questioning.

Good judgment has to be used in deciding what should be developed and what told outright. It is much better to develop and cover less ground than to tell and cover too much, because that which is developed is remembered longer and understood better than that which is told. Young teachers, instead of telling everything, should, as we have just said, experiment a little to see how well and how frequently they can develop a lesson. The rate at which such teachers gain skill in developing and using questions is surprisingly rapid.

Summary. The inductive method should be used in grammar to allow pupils to discover the rules and definitions by studying particular cases. The teacher should use the developing method in order to have the pupils discover as much as possible for themselves without the necessity of the teacher's telling them everything.

Drill. It is necessary to learn grammar *very* thoroughly. The reason for this may be explained by an illustration. For instance, I may start the sentence, "I don't know," and then stop because I wish to say either "I don't know who you are talking about," or, "I don't know whom you are talking about." Now, since I am anxious to finish my sentence at once because I am taking part in an interesting conversation, if grammar is to be of any use to me, I must make my decision as rapidly as I can think. If I cannot, then the rule is useless, for the opportunity of using it has passed.

Consequently, the end of all parsing must be rapid oral parsing. Analysis is of little use to a person except as a means to parsing. Written analysis and written parsing are simply means by which to make oral parsing better. And just as in arithmetic or, even more than in arithmetic, it is necessary to make great use of rapid oral arithmetic, so in grammar the end of all effort is automatic parsing so rapid in speed that we can parse as we need to in the hurry and bustle of a flowing sentence.

I am one of those who believe that all definitions in grammar that are worth learning are worth memorizing well. For we memorize things under two conditions: *first*, when the thing memorized is to be used over and over again; and *second*, when it is put into better words than those improvised by the user. With reference to the first, we have decided that we would teach in grammar only those things which are important; and in connection with the second, it is evident to one who examines these definitions with care that they have been put into words carefully chosen, each word meaning something definite and no word superfluous, the whole idea being much more accurately stated by the author than it could be by an eighth-grade pupil. For both these reasons, therefore, it is wise to have definitions memorized.

The method of memorizing is the same as already outlined. First, be sure that the pupils understand the definition; and second, have attentive repetition till it becomes automatic.

Application. At the same time that the memorizing is going on, the rule or definition should be used in every available place. That is, it should be applied as well as drilled upon. The term *drill* means the repetition of the same thing over and over in exactly the same way. *Application* means the doing of a thing in different ways. Thus, for instance, we drill upon jumping if we stand in a spot and jump over and over again from the same place; but we apply jumping if, as we go about our business, we jump over a fence, across a stream, up a bank, and down a hill-side. These are examples of applied jumping, since the same thing is done in many different situations.

In the case of grammar, we drill upon the pronoun when we say over and over again, "A pronoun is a word that stands for a noun." We apply the definition when we study pronouns in many different sentences.

In an ordinary grammar lesson, there are four different places in which applications may be made.

First, as after question 13 given above, application to the sentences already used in the lesson from which the definition was developed may be made as follows:

Teacher. What part of speech is *she* in sentence number 1?
Answer. A pronoun.

T. Why? *A.* Because it stands for a noun.
T. In sentence number 2, what part of speech is *him*? *A.* A pronoun.
T. Why? *A.* Because it stands for a noun, etc.

The reader will note that by asking the question Why? the teacher elicits a repetition of the definition, and drill is secured. The question Why? also makes the pupils think

and enables the teacher to determine whether they are getting at the facts or are guessing.

Second. Other simple sentences containing pronouns of increasing difficulty should be placed on the board, or examples may be selected carefully from the text. The teacher should be careful to see that the examples given are not too difficult, especially at first. Such sentences may be chosen as: "Find John and ask him to come to me." The same sort of exercise may be given as above, except that it may be made slightly more difficult by the teacher's saying, "Are there any pronouns in the sentence?" and getting the answer "Yes"; following this by the question, "What are they?" and getting from the children the answer "*Him* and *me*." Above, the teacher asked the part of speech of the pronouns after picking them out. Here, the pupils both pick them out and parse them.

As a modification of this exercise, the pupils should be asked to write down a number of sentences, found in reading or used by classmates, in which pronouns occur. The process of making up sentences is rather valueless, because the sentences become too formal and too much alike.

Third. After the grammar lesson is over and all the seat study on the pronoun has been done, the teacher should use the children's knowledge of the pronoun whenever error arises in their oral or written speech. Here we have the crucial application. All the rest of the drill and study on grammar is merely preparatory to this application. Grammar is merely the servant of language and is not of much value in the grades except as an aid to speaking correctly.

Fourth. Occasionally in the textbooks in geography, history, and literature, parsing and analysis may be used when there is likelihood of their making the meaning clearer. But such applications should be made under no other circumstances.

Summary. Each definition should be thoroughly memorized. Application of all rules and definitions should be sought in the speech of the children in all classes; and, as preparation and aid in this, simple exercises containing the facts defined should be worked over at the time the definition is learned.

Assignments. Two plans are followed in making assignments in grammar. The teacher may assign the next lesson in grammar — for example, the adjective — and expect the children to learn its definition out of the book. Or the teacher may lay down a rule that he will teach all definitions and rules in class, and will assign for home study exercises upon these definitions. Of these two, the latter is always preferable; for if the pupil learns the definition out of the book, he does not discover it for himself. It is told to him outright.

The former method is used widely by poor teachers. They say, "Study the adjective for to-morrow," and in the next day's recitation they quiz the pupils to see how well they have learned it. The latter method, which develops the definition in class, requires an assignment like this: "(1) Memorize the definition of the adjective. (2) Parse all the adjectives in these sentences." This is called a review assignment, while the other is called an advance assignment. So in grammar the assignments should always be review and not advance assignments, because the pupils will understand the definitions much better if they are developed in class.

Study. The study of grammar in class has been discussed. The inductive and developing methods should be used as much as possible. The seat study and the home study are very simple, because the teacher sets the assignment quite definitely when she asks the children (1) to parse the adjectives in a group of sentences that she may have written on the board, and (2) to select ten sentences containing adjectives from conversation and books, and to underline

the adjectives. These and other assignment questions are quite definite, and the pupil should have no trouble in working with them.

It is a good plan to allow pupils of equal ability to study together, provided they do not disturb the room too greatly. By way of objection it is claimed that this practice encourages one pupil to lean upon another. This can be obviated, however, by making leaners work alone, or by setting two leaners to work together. In support of the plan it is urged that study is much more joyous, that good students stimulate each other, and that much more ground can thus be covered. The teacher in allowing it should use good judgment, and if any combination is harmful it should be disbanded. Good examples of pupils' working together in socialized recitation may be found in Scott and in McGregor, references to which are made at the end of the chapter.

Alternation. It seems to be practicable to alternate grammar in the seventh and eighth grades, in one year teaching the parts of speech and in the other analysis. However, a better plan is the one already suggested, to teach grammar only in the eighth grade, and then there will be no need for alternation. Otherwise, there should be a separate class for each grade.

REFERENCES FOR CLASS READING

- CHARTERS. *Methods of Teaching*, pp. 314-55. (Induction.)
- CHARTERS. *Sixteenth Yearbook of the National Society for the Study of Education*, Pt. II, pp. 105-09. (Course of study.)
- JOHANSEN. *Projects in Action English*. (An excellent and comprehensive set of simple action situations which give drill upon grammatical forms.)
- LEONARD. *English Composition as a Social Problem*, pp. 123-53. (Essentials.)
- *McGREGOR. *Supervised Study in English*, pp. 149-61. (Illustrative lessons.)

- McMURRY. *Special Method in Language*, pp. 130-39. (Illustrative lessons.)
*MONROE. *Measuring the Results of Teaching*. (Standard tests.)
SCOTT. *Social Education*, pp. 150-56 and many other pages. (Examples of group work.)

CLASS QUESTIONS

1. What difference will it make in your teaching whether you believe in the theory that grammar is studied merely to understand the sentence, or in the theory that grammar is studied to help people to speak correctly?
2. Give five examples of cases in which a meaning was misunderstood because expressed ungrammatically.
3. Give five examples in which, though the form was ungrammatical, the meaning was clear. Was the meaning just as clear to you as though it had been expressed grammatically?
4. What do you think are the most effective incentives to move boys to study grammar? Are they the best?
5. In your experience with children and your own associates, what do you consider to be the ten most common types of error in grammar?
6. What rules and definitions in grammar cover these?
7. Did you ever know a community in which it was considered a sign of "upnishness" to try to speak grammatically? If so, give some details to illustrate the attitude.
8. How can the timidity of pupils in using correct forms at home be overcome?
9. Make an outline for all the parts of speech similar to the one made out for the noun, in the text. (The methods class ought to decide upon some text to follow in this outline.)
10. Show how each item helps to make the meaning more definite (or in some cases easier to express).
11. Which of the items in this outline could just as well be omitted?
12. Take some interjection, such as *Ouch*, *Mercy*, or *Lawsy* and tabulate a half-dozen sentences that you have known each to stand for, thus showing that the interjection is indefinite in its meaning.
13. What form of analysis do you prefer?
14. What forms in parsing do you prefer? Illustrate.
15. What scheme of diagramming have you seen used? Which do you prefer?
16. Do you recall cases in which you were helped in speaking correctly by your knowledge of grammar? If so, give five cases.
17. Do you like grammar? If so, why? If not, why not?
18. Keep a list of all the mistakes in grammar you hear in a day, writing them down unobtrusively. What is the number? Which are the

most frequent? Do they agree with your list of common errors given in question five above?

19. Outline five other inductive lessons in connection with some other parts of speech, definitions, or rules.
20. What are the advantages and disadvantages of giving as an assignment for the day following that on which any rule of grammar is studied in class, the making of a list of the cases in which the pupils hear the rule violated either in school or out? Is it practical to do this?

CHAPTER V

READING

1. The Art of Reading

Function. Reading is the fifth member of the language group of which the other four members are spelling, writing, composition, and grammar. We have seen that in carrying out the major function of communicating ideas each of these others plays its own specific part. In composition we are concerned with expressing our ideas through words in sentences and paragraphs. Grammar makes its contribution in revealing to us the rules according to which the words are accurately placed in sentences, while in spelling we are concerned with the order of letters in words and in penmanship with the written form of letters and words. All of these deal with letters and words and sentences, but reading starts with written or printed words and is concerned with the ideas that lie behind them.

Reading is, of course, very important. If a man cannot read he is dependent for his information upon what he happens to learn, upon what he sees, and upon what others tell him. Without the ability to read he is in the hands of the people with whom he associates. If the people who are around him are ignorant, he must remain ignorant with them. On the other hand, if he can read he is able, through the medium of newspapers and books, to gain ideas from all parts of the earth and from all the writing of all the ages.) He thus becomes independent of his neighbors.

By the simple device of putting some odd-looking signs upon paper it is possible to record facts and ideas so that

every person who knows what is meant by each of these signs can look at them and know exactly what the maker of the signs wished to say. The business of reading is to learn what these forms mean and with this knowledge as a basis to discover the ideas in the writer's mind. And not only is the reader able to discover the writer's ideas, but if he wishes to do so he can express these ideas to other people through what is known as oral reading. In this case he gathers the author's meaning from the printed page and expresses it aloud to an audience in the exact words of the writer. So, reading consists of two chief divisions — the securing of the author's idea, which is called silent reading, and the expressing of the idea in the author's words, which is oral reading, as has just been said.

Summary. The function of reading is to interpret written words and to express their meaning to an audience. The first phrase, "to interpret written words," refers to silent reading. Both phrases taken together describe oral reading.

The Reading Process. When the reading process is analyzed it is found to consist of five divisions. *First*, there is the author's experience. He had something to say. This may be very simple information, as, "I was warm yesterday"; it may be a command, as, "On receipt of this come home," or it may be very complex and full of feeling, as, John's description of the Death on the Cross. But in any case the author knows and feels something that he puts into words.

The writer, when he is about to put his experience into writing organizes it according to the rules of language. He may throw it into the form of exposition, in which case he organizes his points so as to present them to the reader as he sees them and if he does this well his organization can be easily outlined. On the other hand, he may throw it into the form of a narrative, in which case he organizes it

according to the laws and rules of that part of language which deals with narration and has an eye to climax and conclusion.

Second, we have a series of symbols in which the writer dresses his experience, whatever it may be. In this country we have inherited an alphabet consisting of twenty-six letters which are combined into what are called words. Other nations and civilizations may use other forms. For instance, the Chinese have a very large literature which can be read but they have no alphabet. The ancient Egyptians used hieroglyphs, but America, the European nations, and many other peoples utilize the alphabet which we use as the basis of their written language.

The chief business of primary reading as you shall see later is to learn these symbols so that, having learned them, we may use them as tools in finding out what others have to say.

Third, when the reader has mastered these symbols his next task is that of building up in his experience the same experience that the writer had when he wrote. If the author of the letter writes the following expression, "I was warm yesterday," the reader needs to know each of these symbols and in addition get their meaning so that he will understand the experience for which the whole sentence stands. When Shakespeare wrote *The Merchant of Venice* he lived in his imagination the experience that he put upon paper, and when I read *The Merchant of Venice* with understanding I relive the experience of Shakespeare when he wrote the play, as nearly as one individual can relive the experience of another. This, of course, is often hard to do because the writer may have been very emotional whereas the reader may be almost without emotion. The writer may feel like weeping or laughing as he writes while the reader may get the idea but miss the intensity of feeling.

of either joy or sorrow, but in such cases the reading is not of first quality. Such a reader could never become an actor.

Fourth, after the reader has learned the meaning and has built up in himself the experience of the writer, he utters this meaning aloud. This naturally involves the vocal organs and the whole speaking apparatus, tongue, teeth, palate, vocal cords, lungs, and diaphragm. A defect in any one of these may upset the reading process. For instance, a cleft palate or diseased vocal cords or the absence of the tongue might destroy the possibility of intelligible speech.

The book in my hand, typical of most books on the subject, deals with the use of the nostrils, abdomen, and mouth, the active and passive chest, waist, neck and throat movements, with breathing and the vocal cords. While these overlap, they indicate the extent to which the expert reader needs to use the vocal organs. The ability to use them well is the chief characteristic that differentiates the fine reader from the amateur.

Most people do not use their vocal organs with maximum effectiveness. They frequently do not breathe correctly and often do not articulate well. Sometimes "correct" reading is secured at the expense of the writer's meaning. That is to say, the expert reader is frequently so trained that he gives more attention to his method of delivery than to what he is saying. However, such a fault is not a common one in schools, where too little rather than too much attention is paid to the mechanics of oral reading.

Fifth, and finally, there is an audience to be read to. After the reader has secured the writer's ideas for himself, he may then, in the complete act of reading, use his vocal apparatus in reading the written words to others. Here his object is to build up in the audience the experience which he thinks the author had. In good oral reading three

people have as nearly identical experiences as possible — the author had the experience which he wrote down, the reader gets this experience as nearly identical with the author's experience as is possible, and in oral reading the end is secured when the audience gets an experience that is as nearly identical with that of the author and reader as is possible.

Of course the listener might read the author's ideas for himself, and many prefer to do so, but there is one advantage in listening to a good reader. He often understands better than the audience what the author means and feels and by the inflection of his voice is able to help his hearers to appreciate the author's ideas more fully than would be the case if the listener merely read non-inflected printed words for himself.

The complete act of reading, composed of these five factors, is called oral reading. Sometimes the person may read aloud to himself, but that is not oral reading in the strict sense, since there is no audience. The first three steps constitute the act of silent reading in which the reader gets the idea of the writer and rebuilds in himself the experience that was present when the material was written.

Summary. Reading involves five factors: (1) an experience in the mind of the writer, which he organizes; (2) a series of words into which he translates the experience; (3) a reader who deciphers the word symbols and rebuilds in himself the experience of the writer; (4) vocal organs to be used by the reader who has already deciphered the symbols and reproduced the experience of the writer and (5) an audience to which the reader reads the experience so that the audience also may reproduce in itself the experience of the author.

(Qualities of Good Reading. Good reading possesses six qualities. (1) The reader must have a sympathetic understanding of what the author writes. He must not only understand his ideas, but he must put himself into sympathy

with the author and try to see the matter from his point of view. He must not be critical of what the author says. His first duty is to try by all means possible to understand him and his point of view. Later he may differ from the author and criticize his point of view, but when he does this he is not "reading." He is arguing and discussing. (2) Reading must be carried on with the greatest possible speed that can be secured without detriment to understanding or comprehension of what the writer is saying. If one reads very slowly and with great difficulty, he wastes time and often becomes completely discouraged so that he ceases to read as much as he should. (3) The reader should, in the process of understanding the author, recognize what the author says so as to discover his main points, his lines of argument, and his method of building up his case. (4) After he has gotten the ideas of the author and has organized them as well as is necessary, he should retain what he has read so that when he wishes to use it at some later time he will find it available for use in his memory. If the reader does not train his memory to retain what he reads he gets little of permanent value out of it. If, after reading a book, he is unable to recall the incidents, facts, and major points of the author, his time has been largely wasted. (5) In oral reading the reader must have the desire to interest his audience. If this interest is not present he merely "says words." If, on the other hand, he wishes to interest his audience he will be careful to speak clearly and effectively. (6) In reading to an audience he should have a good control of the mechanics of oral reading. His enunciation should be distinct, and his rate of reading should not be too fast for the audience to grasp the meaning nor so slow as to permit their minds to run ahead of what he is saying.)

The Teacher's Objectives. In conformity with the fore-

going, the teacher has clearly four objectives. In the first place, he will seek to develop a *love of reading*, both oral and silent. The most important thing that the teacher can do for children during the eight years of the elementary school, more important than a knowledge of arithmetic, geography, or history, is the development of a love for reading. If children like to read they can, if worst comes to worst, gain their own knowledge of history or geography, while, on the other hand, if they do not like to read they will become really illiterate when they leave school. They will not gain ideas from books and newspapers but will fall back to the semi-primitive condition where they secure whatever ideas they do obtain from the people with whom they happen to associate. The government census shows that we have five per cent of illiterates, and by the term "illiterate" is meant people who are unable to read; but probably twenty per cent of the people of the nation, in addition to this five per cent, who cannot read at all, do not actually read about any of the important topics of the day. Many people who are not so-called illiterates never look at a newspaper, some merely read the local happenings and some glance merely at the headlines and the comic sections. If, however, a teacher has instilled in children while in school a love of reading, and facility for reading rapidly, all this difficulty will be cured and the illiterates will be confined to the census figures.

Not only should the teacher develop a love for silent reading. He should train the children to enjoy reading aloud to other people. If this occurs it will be a common spectacle to see the children in the home reading to other members of the family small or important items, jokes, interesting incidents that they run across in their reading, etc. There is no more powerful factor in the development of a pleasant spirit in the home than the sharing of the

interesting things that one is reading with the other members of the family. In the second place, it is necessary for the children to attain a satisfactory rate of *speed* in reading. If children read slowly they will not enjoy it, for they will pick the line of least resistance and cease reading except under compulsion, which of course disappears when they leave school. In the third place, it is necessary for the teacher to develop the *mechanics of silent reading* such as comprehension of what the author says, the organization of the material to find its important points, and the retention of what they learn. It is quite clear, therefore, that silent reading is used more outside of the reading period than inside. When a child studies geography, history, physiology, or any other subject, he is reading silently and can be taught in connection with those subjects as well as in the reading period, how to understand, organize, and retain what he reads. In the fourth place, and finally, it is the teacher's duty to instruct the children in the mechanics of oral reading. While it must be admitted that silent reading is much more important than oral reading because the occasions on which oral reading is used are very much fewer in number, yet the habit of oral reading is so important in developing good fellowship and intelligence that it cannot be overlooked. In developing skill in the mechanics of oral reading, it is of fundamental importance that the children get the idea that they are reading to an audience whom it is necessary for them to interest. With this clearly in mind, they will have a tendency to read intelligently and to overcome the defects in oral reading which will be mentioned later.

Summary. The teacher has four objectives in the teaching of reading. These are: (1) the development of a love of silent and oral reading, (2) speed in reading, (3) comprehension, organization, and retention of what is read, and (4) an adequate skill in the mechanics of oral reading.

Subject-Matter. The problem of selecting subject-matter in reading and placing it in the proper grades is quite different from the problem of selecting subject-matter in handwriting or spelling. In handwriting there is no problem of selection. We teach all of the twenty-six letters and the punctuation marks. In spelling we know quite definitely the common words that children and adults use in writing, but the case is quite different in reading. There are thousands of newspapers and magazines and hundreds of thousands of books from which the children may select, but we do not have many specific studies which show us exactly what the children should be given to read. They have, of course, to read the textbooks in all the subjects, but outside of that we have to depend upon general principles rather than upon specific facts, which are, of course, more helpful than the general principles.

Since we are dependent upon general principles it would be well to state four of them which should guide us in our selection of material to read. *In the first place*, the material should be interesting. Children should be "exposed to" a wide variety of reading, and when this is done, teachers soon learn which things are, in general, most interesting to children of certain grades and which are not. The teacher will further try to make the material as interesting as possible to them. But if he is a good teacher and still cannot develop interest the probabilities are that in the reading class the material should be left out or treated lightly with succeeding classes. The question of interest will be discussed more fully later. *In the second place*, reading should be graded on the basis of difficulty. Generally speaking, it is unwise for children to read material that is beyond their abilities because it destroys interest. It is a mistake, of course, to choose selections which are too easy, because then the children have no opportunity to

increase their powers of reading. In each lesson there should be a nice balance between easy material and difficult material. Such a balance is not preserved if in the fifth grade the selection is so difficult that the children do not know the meanings of half of the words. If we were to set an arbitrary standard we might say that in a reading lesson not more than one-half dozen quite unfamiliar words to a page should be present. If the teacher looks over the reading lessons with the class in mind he will find that he will often have to change the order of lessons in the reader. During the early part of the term he will teach the easy lessons and will leave the very difficult ones for the end of the year. In the selection of outside reading for children he will be very careful to give them easy reading material. *In the third place*, material should be selected on the basis of value. This means, briefly, that the artistic form should be good. It is better to have children read *Treasure Island* than *Nick Carter* because *Treasure Island* is better written. Much can be done to develop the children's interest in good literature rather than uncouth and trashy material. Fortunately most of the material that is prepared for children in school readers and school books is reasonably good and the teacher need not be greatly concerned about the lack of value of the material which is easily available for the children. *In the fourth place*, the supply of reading material should be abundant and varied. Children "learn to read by reading." It is much better to have a child read the basic text until he knows it and add to that three other books than to have him read the basic text three times more. This procedure is good partly because of interest—the textbook grows monotonous—and partly because it gives more practice in recognition of other words and ideas and adds to his fund of information. The sources from which to obtain this material are many and

diverse. The school library should contain single or duplicate copies of a number of other readers. It should have a few library books selected from such reading lists as are found in Stone and Germane, in the references at the end of this chapter. Magazines may also be brought to the school for reading. Newspapers can be used in school and at home. Pamphlets, simply written, on civics and industrial activities can be obtained by the teacher and it is frequently wise to provide for the children in the upper grades copies of textbooks in history, physiology, etc., written by other authors than the writer of the basic text.

Summary. The subject-matter for oral and silent reading should be selected upon the basis of interest, difficulty, and value. Abundant opportunity should be given for wide reading so that the children may gain facility in getting information from the printed text.

Stages of Development. Children develop by stages, during which their interests and abilities are profoundly changed.

That children differ from adults is a matter of common experience. That their interests change from year to year has been observed by everybody. That they study with the greatest success those things which are most interesting to them is a fundamental pedagogical doctrine.

Because of this, attempts have been made to mark off the children's interests by stages. If we could only learn what interests are strongest in each grade we should have an easy time getting the children to work hard and intelligently. We should not want to mollycoddle them, but we could avoid teaching things of no possible interest to them. But unfortunately, up to date no one has made a really unassailable classification. The attempts to discover what interests children in each grade up to adolescence have not been successful, and the beginning teacher can

do little more than follow the course of study as outlined by the authors of textbooks or the superintendents of instruction.

However, there has been one particular attempt at dividing the children's lives into stages that should be described because of its historical importance. This is known as the recapitulation theory, which holds that every one from conception to maturity passes through the same stages as has the race from the beginning of life in the geological ages until now. It has been observed that the fetus of any animal before birth passes through the lower orders, in a superficial way at least. For instance, the human embryo in one stage before birth cannot be distinguished superficially from the fetus of a fish, and later of a dog. Man has evolved through these stages in millions of years and each individual child passes through the same stages. But a child makes the passage with extreme rapidity. Likewise, the upholders of this doctrine claim that just as the race passed through the tree-dwelling, cave-dwelling, hunting, pastoral, and agricultural stages, so each child after birth passes through the same stages except that he does it in a few years instead of a few hundred thousands of years, as has been the case with the race.

The pedagogical implication of this theory is that children should be taught the arts of each of these stages while they are in them. We are told that they should hunt and make bows and arrows, slings and cross-bows, while in the hunting stage. They should be allowed to live in caves, work with skins, make stone implements, and experiment with fire in the cave-dwelling stage. Each of these stages should be fitted with the appropriate training.

As a theory this will not hold with any exactness. We cannot see these stages in children very clearly and they

often skip them completely. But as a source of suggestion for making school work more simple and letting the children do primitive things it has been illuminating and useful, for undoubtedly we have kept children in school too close to books and seatwork and have not given them the opportunity to work with a wider variety of interesting things. When we discuss the manual arts I shall take pleasure in giving many illustrations of how the appeal to the constructive impulses and to the delight which children find in the use of primitive implements is of great value in the grades. Because of the fact that there is so much confusion about the correct view to take of the stages of childhood and the characteristics of each stage, the teacher has to rely largely upon the printed course of study in the textbooks, and supplement this by his own knowledge of children. He knows for instance that little children love simple stories of action, Mother Goose rhymes, and nonsense verses, and that later they become tired of these and become interested in fairy stories, but for only a few years, and that after this the growing boy becomes absorbed in the stories of adventure. Following this occurs a period of more earnest endeavor when the child enjoys reading the mature ideas of adults. In all of this there is a progressive advance, stage by stage, but it is quite impossible to say at what age, either chronologically, mentally, or physically, these interests appear. Therefore, I repeat, the inexperienced teacher is wise to follow the text until he finds from experience that the course of study may be modified to advantage for the benefit of the individual class.

Summary. The course of study in reading should follow in broad outline the stages of development of the children concerned. But since there is no consensus of opinion upon the time at which the stages occur, the inexperienced teacher has to depend upon the course of study that is given him and upon that ripening judgment which comes to him from dealing with children.

Interest. There are three important facts to be borne in mind in the development of interest in reading. *In the first place*, the teacher depends more fully upon the immediate interests of children in this subject than in any other. It is the children's right to expect to study what they like in this subject. Some of the things that they seem to like have just been mentioned in the illustrations of the different stages of development, but no complete classification has been made. Supplementary to the foregoing list of things we may mention, however, the fact that in the intermediate grades they are fond of stories of danger, of achievement against odds, and of sports. They enjoy the experience of hero-worship and they fortunately prefer material which embodies high ideals. *In the second place*, good teaching is an important factor in the development of interest. A teacher who enjoys reading himself and enjoys the experience of getting children to like it is more successful than one who is not interested in reading. Two young women were looking for a Christmas present for a third. One said to the other, "Let's get Mamie a book," and the other replied, "No, Mamie has a book." Quite clearly Mamie would not make a good teacher of reading. She has no interest in the subject. But in addition, the teacher needs to see that the children read well, and this leads us to the third factor in securing interest. This is the factor of speed, which has been so frequently mentioned. Very frequently it is observed that a child who will not read except as a task takes on the keenest interest in reading when his rate of reading has been brought up to the level which indicates that he is no longer having trouble with his reading. The methods of improving speed will be discussed in a later section.

Standards. The standards of speed in silent reading can be quite definitely stated because they have been worked

out with considerable care. We shall reproduce the standard set up by Professor Gray. In the reading of simple material of the narrative type, adapted in content and vocabulary to the grades in which the tests are given, the children of the class should on the average reach the following standards:

GRADES	2	3	4	5	6	7	8
No. of Words per Minute	90	138	180	204	216	228	240

It will be noted that the increase in the rate of speed grows less as the children grow older. They have attained nearly their maximum improvement by the end of the sixth grade.

The teacher can informally test out his pupils for himself by selecting for the grade some short story of at least 250 words with which the children are not familiar and which is about right in difficulty for the grade. The teacher will then, with watch in hand, have the children start together on signal and have them stop on signal at the end of a minute. When they stop they will indicate with some inconspicuous mark the last word that they read. The teacher and the children may then calculate the number of words covered by each pupil. This gives roughly the rate of reading of each, and the average for the class can be computed and compared with the standards. If one wishes to give a standard test which will compare exactly with the Gray standards it will be necessary to obtain through the superintendent copies of the Gray test which is described in the book by Stone included in the reference readings at the end of the chapter.

Tests for comprehension have been worked out and among these the one most widely used is the Monroe silent

reading test. However, home-made tests can be made by the teacher by the use of numerous devices which will be described in the next section.

The foregoing standards apply to silent reading. For oral reading there are no specific standards as to the proper rate of reading. The standard is a general one. Children should have the attitude that they want to read so clearly that the audience can understand what they say, and if they have this attitude the rate of reading largely takes care of itself. The other defects in oral reading will be discussed in the section on that subject.

Testing. In testing silent reading it becomes quite clear that children have different rates of reading in different subjects. The child may read stories very rapidly while his skill in reading geography may be very poorly developed. It is important that a test for speed should also be made to include a test for comprehension, because children under the impetus of reading as much as they can, frequently read so fast that they do not understand what is read, and this is, of course, dangerous.

Testing the children for both speed and comprehension is absolutely essential in improving the quality and rate of their reading. More than that, children are able by means of graphs and charts and practice curves to develop a keen interest in improving speed and quality just as we found it in spelling and handwriting. Over and over again it has been demonstrated that the teacher can transfer from his shoulders to the shoulders of the children the problem of increasing their skill in reading, if he can show them with quite definite exactness where they are weak and how much they can improve with effort. The teacher should no more think of giving instruction without adequate means for letting the children see the rate at which they are overcoming their specific difficulties than of teaching

without a textbook. This is the outstanding contribution of the research work that has been done in methods of teaching during the past five years.

Reading Projects. It is obvious that reading may be used in connection with projects in other fields which require reading for their performance. The boy who is growing corn as a project in agriculture may have to do a great deal of reading in order to find out how to grow corn. But there may be direct projects in reading. These are of two kinds. The first is reading for enjoyment. Whenever a person picks up a magazine or a book and reads it without its being an assigned task, he is carrying on a simple reading project. There are, of course, thousands of these in the ordinary course of the year's reading. This is the natural condition under which reading is carried on, and the student will not continue the reading unless he is interested in the content. In selecting projects of this sort the most important consideration is to get interesting reading material which the children peruse because they like it.

There is another type of technical reading project in which the children seek to improve their ability to read silently or orally. When pupils, by the use of graphs and standards seek for greater speed, comprehension, and retention, by putting thought on methods of improvement, we have a technical reading project and this is very much worth while. If the responsibility for the improvement of reading can be shared by both the teacher and the pupils the rate of progress will be very much more rapid and the results will be much more effective.

Summary. Reading is used extensively in connection with many projects in other fields. We utilize reading projects when the children are led to read for pleasure or when they use their own initiative in an effort to improve their technique of reading.

2. Silent Reading

Function. The objective in silent reading is to get ideas from the printed page and it involves the four factors of speed, comprehension, organization, and retention. Naturally with such an objective the problem of teaching these four elements arises. The query is, "How can we secure speed, organization, comprehension, and retention in silent reading?" Upon these points the studies of the past five years furnish us with some very interesting information.

Diagnosis. According to the point of view which we are developing in this book, and which is an outcome of the current movements in education, our first step in improving the ability of children to read silently is diagnosis. When we have discovered the difficulties that children face in learning to read silently and with efficiency, we have made an excellent start toward the curing of the defects. It is at once apparent, of course, that there are many different kinds of silent reading, dependent upon the subjects which are read. Some excellent silent readers of prose have difficulties in reading poetry, and some quite efficient readers of history have great difficulty in reading arithmetic. The problems of silent reading are not simple and, whatever they may be, they have to be determined through diagnosis.

Anderson and Merton have prepared the following analysis of the errors which children made in using two silent reading tests. After the tests had been given they went over the children's work carefully and tried to discover what was the cause of the mistakes which they made. After I have given the list I shall make some remarks about the significance of the items.

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KIND OF ERROR	FREQUENCY	PERCENTAGE
Meager meaning vocabulary	741	33
Inability to find the essential idea	423	19
Omission of part of idea due to short unit of visual recognition	306	14
Giving general thought instead of specific answer, or particular instances instead of general thought; i.e., inability to get definite information from material read	293	13
Inaccuracy due to carelessness or haste	90	4
Failure to differentiate between words somewhat similar in spelling	76	3
Failure to note carefully small words and key words	95	4
Substitution of pupil's own thought for that in paragraph	97	4
Inability to think logically in response to question	91	4

It will be observed that one third of the mistakes were due to meager vocabulary. This means that the children did not understand the words in which the tests were expressed. Items two and four constitute another unit which makes up one third of the difficulties. They are errors of organization and indicate that children either were not able to pick out the central idea or were not able to get details. Quite significant is the fact that fourteen per cent of the mistakes were due to eye difficulties. This does not mean that children are near-sighted or far-sighted or have astigmatism. They may or may not have these difficulties, but people with perfectly normal vision as judged by the visual charts sometimes read only a small number of letters at a time. This is very well illustrated by photographs which have been taken of the eye while reading is being carried on. To the person who has not studied the matter it would seem that the eye glances smoothly and evenly across the page but this does not happen. What really happens is that the eye moves

quickly and stands still, then moves quickly again and stands still. These points where the movement ceases are called fixation points. The slow reader takes small jumps and many of them. The rapid reader sees more at a time. For instance, a rapid fourth-grade reader described by Judd used four fixation points in one line, seven in another, and six in another, while the poor reader in the same grade had nine in one line, ten in another, and seventeen in another. As a result of this defect the student not only reads slowly but he may miss parts of the content of what he is reading.

A number of other difficulties which caused low grades in the foregoing tests are the following. A student may read word by word instead of by thought groups. Some of the students use vocalization and lip movements. That is to say, the muscles of the throat and vocal organs silently form the words and in some cases the lips are actually used. This of course makes reading very slow and must be overcome. Occasionally students use their fingers to follow the line.

Summary. The important point is that it is necessary for the teacher to see just what the cause of the difficulty is as a basis for methods of curing the deficiency. In general, the types of difficulty that have been mentioned here in connection with speed, comprehension, organization, and retention are the most serious difficulties in silent reading.

Interest. When we wish to increase speed, comprehension, organization, or retention in silent reading, it is quite important that we get the interest of the children in the problem. This is secured by a number of methods which have been mentioned and some others which are of importance. It is quite clear that if the children are to have an interest in silent reading they should be exposed to interesting material. It is particularly important that they

be given easy material for practice. It is also of very great importance for the teacher to have an intelligent enthusiasm for improvement and, finally, an appeal may be made to emulation and rivalry. Certainly the individual child should have records made of his proficiency in silent reading in speed, comprehension, organization, or retention, or, rather, in all of them, so that he can see how rapid his improvement is.

Speed. In working for speed many of the errors can be caught. If the child is told to read rapidly the eye movements tend to increase. Lip movements tend to cease, but obviously direct attention must also be paid to some of these deficiencies.

The best time to have speed drill in silent reading is from grades three to six, because by the end of Grade VI the rate is rather well fixed. It is interesting to note that speed in reading does not necessarily lower quality. There is a popular fallacy abroad to the effect that slow readers remember better, but statistics do not bear this out. On the whole the people who read most rapidly retain the most, although it is quite clear from the records that if a person speeds up beyond his normal rate of reading he has a tendency to comprehend less, but if he extends himself beyond the normal for some little time, the higher standard becomes his normal standard and his skill in comprehension rises. It is also apparent that in skimming — reading very rapidly to get at the main points in a selection — comprehension and retention are not so great as where all the words are read.

There are seven methods for getting speed which are worthy of careful attention. (1) It is quite important that the children should, in working for speed, get the right mental set. The teacher should show them from speed tests which they have taken that they need to read more

rapidly, or should explain the value of rapid reading, particularly calling attention to the fact that rapid reading saves time. The whole matter should be talked over with them as a problem. By this we mean that the children should have all the necessary facts laid before them, should be told what the difficulties are, asked what can be done to overcome them, and finally informed of the fact that records will be kept to see how much they improve in speed. An enthusiastic attitude toward the problem is an absolute essential. (2) They should be given a great deal of practice in rapid silent reading and when this is done care should be taken to test them for comprehension at the same time. It is particularly important to notice those who have jumped rapidly in speed and to ask them questions to see that they are not merely letting their eyes run along without any idea of what they are reading. A number of these methods of testing comprehension are mentioned in the next section. In giving these practice exercises children should be told to read as rapidly as possible, time control should be maintained by having them start and stop on signal, practice should not be longer than two minutes at a time and might preferably be one minute in length. The number of words read should be recorded and graphs may be made. The children themselves enjoy keeping their own individual charts. Such a chart can be made by using squared paper and placing the numbers of words along the vertical column to the left-hand side and the dates along the top, as in the handwriting chart on pages 55, 56. However, along the top, instead of using months, days or weeks can be used, depending upon the frequency of the drills. (3) Exercises should be given to decrease vocalization. That is, the forming of words in the throat or the movement of the lips should be minimized. In the case of lip reading the child's attention should be

called to the fact and he should be instructed not to move his lips while he is working for speed. The fact that people form words in their throats should be pointed out with an explanation of why it is important that this should not be done, then the ordinary speed instruction should be given. That is to say, the children should be told to read as rapidly as possible. (4) In all the grades, but particularly in the lower grades, flash cards may be used. By a flash card is meant a card on which is placed some printing to be shown quickly to the students so that they may secure practice in rapid recognition of what is on the card. The teacher holds the card before the class and quickly turns it down while the children are asked to tell him what is on the card. These flash cards may contain words or phrases and sentences or even paragraphs, the time being modified according to the length of the material and care being taken to make the time as short as possible. (5) Easy material should be used in all speed work. If we are working for rapidity we can get it best by having material so easy that all the children need is to work for speed. They ought not to be bothered by many words in the selection which are too difficult for them. This easy material can sometimes be gotten by using the readers or the other textbooks of a lower grade and there is no reason why material with which they are familiar should not be used provided allowance is made in the practice records which are kept. (6) Rhythmic eye movements should be induced, and training should be given in such movements. (7) It is very important to use individual records and graphs. It stimulates rivalry among the students and especially that most wholesome type of rivalry between the pupil and his own previous record. It enlists the interest of the class as a whole in the effort to develop speed and makes the pupils enthusiastic about seeing the class average or median rise above

the record of yesterday. This enthusiasm, says O'Brien, spreads to all the members of the class, even to the less ambitious; it appeals to their pride and loyalty and creates an *esprit de corps* that is favorable to the success of the effort.

Several other suggestive descriptions of, and directions for, giving lessons in silent reading which space does not allow us to summarize here, are found in Stone's book which is listed in the references at the end of the chapter.

Comprehension. In developing comprehension or understanding of what is read the teacher has at his disposal not only the reading period but also the history, geography, and arithmetic periods. Every subject becomes a laboratory in working upon comprehension. Frequently children are poor in arithmetic because they are not able to read the arithmetic problem correctly. Clearly in history and geography the chief purpose of the study is to have the children understand what they read.

The quality of the comprehension can be improved and several devices have been described and may be found in the references at the end of the chapter.

(1) Children's interest in getting as much as possible out of material from one reading should be stimulated. It is a well-established fact that children will comprehend what is in a selection much better if they know that they are to be held responsible. The teacher, for instance, may say, "In reading this material I want you not only to read rapidly but I shall expect you to know what you have read." When the proper attitude has been developed the teacher may test by asking questions. These questions may be given orally as they usually are in any recitation, or they may be written down on the blackboard or mimeographed, if a mimeograph machine is available. As an illustration of this, I quote from Stone (*Silent and Oral Reading*, p. 176), for the purpose of showing certain types of questions that

may be easily answered in writing. The advantage of having the answers written down lies in the fact that the teacher can grade each paper and determine upon the record for the lesson much more accurately than if he asks oral questions from individuals in the class.

THE LITTLE SPINNER AND WEAVER

(*Chaty Readings in Elementary Science, Book 3, p. 64*)

Assignment: First read the whole selection through rapidly. Then read the part indicated before the question, and write the answer if you can. If necessary to re-read, in order to answer the question, do so. After you have written your answer verify it; that is, re-read to see if it is correct. In case you think what you have written is not correct, do not erase it, but put a large question mark at the left-hand margin. The questions should be answered in your own words, and not by copying sentences from the book.

Paragraphs 1 and 2. Give two reasons why a spider is not an insect.

1.

2.

Par. 3. Why do spiders spin webs?

On this rough outline drawing of a spider's body put an X where the spinnerets are located.



Par. 4. Give two reasons why the cord fastens where it drops.

1.

2.

Par. 5. Give two reasons why the web is not easily destroyed by the wind.

1.

2.

Par. 6. How are spiders beneficial to the garden?

Par. 7. Why does a spider lurk under a leaf near the web?

Paragraphs 1-7. Prove that we must use *spinner* and *weaver* both in order to describe fully what the spider does.

(2) In other cases children, particularly in the primary grades, may have written directions placed on the board for them to read silently and follow. Such directions might be, "Hold up your hands," "fold your arms," "jump on one foot," and so on.

(3) Another very interesting type of test to give is what is known as a *completion* test. This means that sentences may be written on the board or mimeographed, with blanks to be filled in with important words in what they have read. For instance, in a lesson on the history of the Civil War some completion questions might be constructed as follows: "The Civil War began in the year . . ." "It ended in the year . . ." ". was President of the United States at that time."

If the teacher carefully constructs blanks so as to make it necessary for the children to fill in the words, he can quickly determine after the test is given whether they have comprehended what they have read. This makes a very interesting variation from the ordinary oral question method in finding out what children know about what they have read.

In using the completion tests the statements may be placed on the blackboard and the pupils be required to write only the words to be substituted for the blanks. If there are ten questions written on the board and there is one blank in each sentence, for Question 1 the child will write on his paper "1" and after it write merely the omitted word. The same procedure will be followed for Questions Nos. 2 and 3. If there are two blanks in the sentence the words may be placed under each other after the number of the question. The papers are then scored on the basis of the number of words that are correct, or, in cases of doubt, that are synonymous. If there are ten blanks, six of which the child gets correct, he has a score of six or sixty per cent.

(4) Another type of question with which the beginning teacher can experiment is what is known as the true-false test. In this case two statements are given, one of which is true and the other false. For instance, Germane and

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Germane give the following illustration: The teacher had assigned to the sixth-grade geography class the reading of a section on New England. She then explained that she would read a list of twenty statements based on the assignment and that, of these statements, some were true and some were false. If the pupil considered a statement to be true, he was to make a plus sign, while if he thought it was false, he would make a minus sign. The teacher read these at a rate of one every thirty seconds. As the teacher read each question she gave the number, and all that the children did was to write the number down on the paper and put a plus or minus after it. The test was scored and the results recorded in approximately fifteen minutes. Each pupil's final score consisted of the number of correct answers minus the number of wrong ones; thus the pupil who answered eighteen out of twenty correctly and two incorrectly scored sixteen points, or eighty per cent. A few of the questions prepared by the teacher will be of interest to the reader: (1) The New England States comprise an area greater than that of the Southern States. (2) Montpelier is the capital of Maine. (3) Most of the rivers flow north and south. (4) Fishing is an important industry. (5) The largest State is Massachusetts. (6) New England has many thriving cities. (7) The surface is, for the most part, rough and broken. (8) Harvard University is located in New Haven.

(5) Another type of test is the recognition test. This will be first illustrated and then explained. Three examples of the recognition test are as follows:

Pittsburgh is in: Pennsylvania New York Ohio Massachusetts.

The largest State in the Union is: California New York Texas Montana.

Henry Clay was an: inventor general statesman explorer.

The object of such a test is to have the children determine which of the statements is most nearly correct. This test was used quite extensively in the tests that were given to the soldiers in what are known as the "Army Alpha" tests. The test, when prepared by the teacher, may be given either orally or may be written on the board and the children asked to write down only the correct word. It provides a pleasant variation which interests the students and like the other tests which we have mentioned takes very little time to score. The teacher spends more time upon the careful preparation of the test than he needs to spend upon reading the answers afterward. In fact, most of the scoring can be done by the children themselves. It also makes a very pleasant variation for the teacher from the usual practice of reading many long papers which take much of her time and which do not, on the whole, test more accurately than these, which are so much simpler to grade. However, the teacher must be cautioned against using any one of these forms exclusively. They constitute what is known as "a battery of tests" and should be used to supplement each other during the course of the month. Some can better be used for one kind of material and some for other types, while at still other times they are introduced merely for variety.

Summary. In testing comprehension, five different forms may be used. These are oral or written questions, true and false tests, completion tests, recognition tests, and the following of directions.

Organization. In silent reading, whether carried on in the reading class or in connection with the other subjects of study, it is not sufficient for the children merely to understand what they read. It is necessary that they organize it and several methods are provided for drill in organization. *First*, it is again necessary to get the children interested, for the reasons mentioned over and over again.

Second, the children may be asked to prepare topical outlines with which every teacher is well acquainted. Stress must be laid upon the fact, however, that in preparing the topical outlines well-organized material should be used. This point needs to be emphasized because of the fact that unfortunately some of the material in the textbooks which children use has been very poorly organized by the author. Such material should be discarded when training in organization is given. Just as in speed we work with easy material, so in organization we should use only material whose organization can be rather easily determined. *Third*, as a variation of this procedure children may sum up paragraphs. Such a recitation may, according to Stone, begin by having all the children read the unit through rather rapidly to get the general theme. The children may then be asked to select a suitable topic for each paragraph. Thereupon the class re-reads the first paragraph slowly and works out a topic, and so on through the unit. Children are also asked to discover the sentences that are most significant. Reading lessons of this sort should be included in every term's work in the fourth, fifth, and higher grades. *Fourth*, children may be asked to make running notes on the selection read. This is done from the topical outline, in that children make notes in each paragraph of what is discussed. To make this point clear, we shall quote again from Stone, p. 189, in which he gives an interesting illustration of what notes upon the selection *How the Trolley Car Runs* were made by a student in the class:

- ¶ 1. Why the marble rolls and stops — two things that happen
- ¶ 2. How to move cars — what electricity travels through — insulation — example, lightning rods — a circuit — free — closed
- ¶ 3. The generator — power house — how it drives the cars — closed — broken circuit

- ¶ 4. Care in laying rails to prevent jumping of electricity
- ¶ 5. The motorman's work — speed — brakes — skidding wheels — sand
- ¶ 6. How the car is heated — why it does not catch fire
- ¶ 7. What the *trolley* is — how made and used
- ¶ 8. How wires may be placed — underground — overhead — conduits
- ¶ 9-11. Electric locomotives — third rail — loose wires — advantages of steam over electricity — storage battery not yet perfected — trial of running cars without rails — why the overhead trolley is preferred
- ¶ 12-13. What the trolley does for the country — example, peach farm — speed in reaching markets — less expense — how it helps the steam road
- ¶ 14. How the trolley helps the workman — in congested districts — Great Britain, Belgium, and Cleveland — Ancient ideas of the city and the trolley

Fifth, still another interesting method is to have the children match paragraphs and paragraph headings. This may be carried on as group work as follows. The class is divided into two groups. Each group is given a short selection and each member of the group reads a selection and makes as many paragraph headings as possible in a given time. Each group then decides upon which is the best heading for each paragraph. These headings are handed over, with the book, to the other group for each member of the group to match all the headings that he can in a limited amount of time. Then the members of the groups agree upon the best matchings. The group that made the headings checks the matchings of the other group, and comparison is then made of the percentage of correct matchings made by each team.

These are a few of the devices that have been worked out in the classroom for developing ability to recognize. Others may be found in the references at the end of the chapter, particularly in Germane and Stone.

Retention. It is quite important that if the children are to get the most out of what they read, they should be able

to retain a reasonable amount of information. One of the most serious criticisms brought against schools at the present time is the lack of definite information possessed by the pupil. Unless children learn facts thoroughly all that they learn is a jumble of hazy information or positive misinformation. This is regrettable and is due partly to the fact that memory is not infallible, but chiefly to the fact that school teachers do not place as much importance upon memory and drill as they should. We are inclined as a body to feel that if the children understand what they read we have completed our task of teaching. The criticism to which I have just referred can be removed only by greater attention to memorization and more intelligent use of the laws of memory and habit. The methods by which retention may be developed in the silent reading class are the following, based upon the Germanes' work: (1) Get the interest of the pupils in the value of knowing things well. (2) Let the pupils know that they are to be tested on the material read, and do not fail to test them. (3) Give the oral or written test immediately after the material has been read. (4) Have short, brisk daily reviews of the outstanding facts of the previous day's discussion or lesson. (5) Provide weekly and monthly reviews of the work covered. (6) Have the pupils prepare lists of questions, the answers to which cover the main points in the work of the week or the month. (7) Let the test consist chiefly of these questions. Have the papers graded in class by the pupils and the teacher, who are also to decide upon what constitutes a complete answer. (8) See that the papers are at once returned to the pupils so as to give each a chance to review his own and to protest if he thinks it has been improperly graded.

Summary. In silent reading the interests of the children should be enlisted in speed, comprehension, organization and retention.

The teacher should carefully diagnose the difficulties of the individual pupils and provide exercises which will remove their difficulties. Individual records should be kept and tests should be given from time to time so that the children can observe for themselves their own rate of improvement.

3. Oral Reading

Function. In oral reading the object of the reader is to convey to an audience the ideas and feelings which the author has expressed in the material to be read. It is based upon silent reading, since the reader cannot present the author's ideas to the audience if he does not understand them and feel them himself. But it goes beyond silent reading in that it is concerned with the audience and with methods of oral expression.

The Audience. In reading to an audience, the natural situation is this. The reader reads something in which he thinks the audience will be interested, and about which they do not know. For instance, we will not read the sport items in a newspaper to the person who is not interested in sport, nor will we read a joke to the serious-minded person who is incapable of seeing the point. Neither do we read to a person something that he has recently read himself. Usually before we read anything to any person outside of school we say, "Have you read so-and-so?" and if they say, "Yes," then it is quite foolish for us to read it to them. If, however, they say that they have not read it and if we think that they will be interested in it, we are properly prepared to begin the reading.

This situation is complicated in school. Most reading lessons are carried on after all the pupils have read the lesson in the book in preparation for the recitation. In consequence of this we have an unnatural situation. The reader has neither of the two incentives to good reading that have just been mentioned, because the children are already

thoroughly acquainted with the material and there is no *real* objective in reading to them.

However, this cannot be completely obviated in school because we are concerned not only with the content of what is read but with the forms of expression that the children use and the difficulties that they have in reading intelligently. Moreover, these forms of expression are so important that they have to be drilled upon and the most efficient way of doing it is by having everybody read the same selection.

Notwithstanding this fact, we can do much to develop real reading incentives. This can be done by having many supplementary readers and having a child or a group of children read one set which the other group has not read; then when the children of one group read they read to the children of the other group as an audience, and vice versa. Or individual children may bring in material which they have read and which they think will be of interest to their classmates, and read it to them. This material may be got from newspapers, magazines, and from books in the library.

As a matter of fact, the teacher who wants to build up natural reading situations can easily invent many devices. The chief danger lies in the teacher's not knowing about the natural reading situation and feeling that he has done his duty when he has had the children practice upon material which everybody already knows and is frequently quite indifferent to.

Diagnosis. Here, as elsewhere, the scientific teacher analyzes the difficulties of the children in oral reading. He listens to each child, and sees what the trouble with him is. Sometimes the child is not conscious of any audience and so reads too loudly or inaudibly. He may "call" words, he may mumble, or he may read either too

rapidly or too slowly. Moreover, he may express feeling poorly.

Methods of Improvement. Several methods are mentioned for improving the children's ability to read aloud. (1) First of all, it is necessary to get children interested in the audience idea and have them develop a real desire to read to other people. (2) As has just been stated, the class may be used as an audience. The reader should be expected to put his thought across to the audience and, on the part of the audience, help can be given by having them listen politely and requiring them to be able to give the most interesting point in what is read, name the characters, and tell at the end of the recitation which of the selections they like the best. The audience idea can be worked upon, therefore, from both ends — the reader trying to put his idea across to the audience and the audience trying to get his idea. Those of us who have read or spoken to an audience know how much of our enthusiasm in speaking or reading is determined by the interest of the audience. If everybody watches us as we speak we are enthusiastic. If they are looking out of the windows we grow discouraged. Children are not different from adults in this respect. (3) A very good method of developing oral reading is through dramatization. When the children take part in home-made plays it is surprising how natural their expression becomes. They cease reading and begin to talk. This is especially true if they do not have to memorize their words too exactly. (4) Another method of getting the audience idea across is to have children go to the public library or to the books in the school library to look up selections upon some topic. For instance, if in history the Colonial period is being discussed and there are four histories by different authors in the library, it is possible to have the children study the different authors and be prepared to read what

they have to say in class upon the different points raised. Frequently authors differ in their statements and the children are very much interested in bringing in these conflicting statements and reading them to the class. (5) Occasionally the procedure can be varied by having the teacher take a story out of a magazine and cut it up into a half-dozen sections. These can be pasted on separate small sheets of cardboard and handed to a half-dozen pupils, each of whom will read his own section. Finally (6) much can be accomplished by having the teacher himself read to the pupils. Example is of considerable value in teaching proper standards. The teacher with a fairly good voice who has the audience idea himself and can read naturally, ought to use his own oral reading as a method of developing skill in his pupils.

Summary. In developing the audience idea and getting the children to read naturally to the audience, it is important that the children be interested in the problem and work upon it, that they use the class as an audience, and that they dramatize the material. Variations can be made by having topical readings and by using the cut-up story. The teacher should frequently read to the class, also.

Reading Aloud. A few of the specific difficulties with which we are confronted in reading aloud may be mentioned. Children frequently are unable to read aloud effectively because they are not conscious of the audience, and to cure this difficulty they should be talked to about what reading aloud really means. They should be made to realize that it is their problem to interest the audience, and their duty to read intelligently and pleasingly. Sometimes their difficulty is due to shyness. They are not at their best when they stand on their feet and read to people. Frequently it is due to the fact that they have little ability to pronounce the words. They may halt and stumble. In fact, they may have so much difficulty in recognizing

words and may have to give so much attention to word recognition that they forget the audience.

Punctuation Marks. Frequently a pupil allows his voice to rise at a period or to drop at a question mark, and pays no attention to commas. The mechanical method of handling this is for the teacher to say, "John, you did not let your voice fall at that period. Read it again and see that it falls"; but this method is ineffective because John, if he is like many other children or adults, does not know how to make his voice rise or fall and when he tries, does not know whether it goes up or down. The trouble with John's reading is that he does not understand the sentences. If he did his voice would drop naturally without any attention on his part. Therefore, instead of telling John to obey this artificial rule, the teacher should help him to understand what he is reading.

Loud Reading. Frequently as soon as a pupil begins to read he starts to shout. Instead of merely saying, "Do not read so loudly," the teacher should go to the bottom of the matter. He reads loudly because he has forgotten his audience. Say to him, "Do not try to make the blacksmith in the village hear — read to me, here beside you." Then, as he realizes that his audience is near his voice will fall.

Too Low Reading. Exactly similar is the trouble with those pupils who read in a voice too low to be heard distinctly. They have forgotten their audience. The rule for all speakers and readers to follow is to address the people who are farthest from them in the room. When a speaker does this his voice naturally begins to accommodate itself to the distance. Therefore if the pupil reads in tones too low to be pleasing and audible, the teacher may place himself in the distant corner of the room and have the pupil read to him, or may tell the pupil to read to the boy or girl farthest away from him.

Calling Words. The practice of stopping before each word is due in part to the practice sometimes permitted in primary reading where the teacher does not require the children to read fluently. It is partly due to the inability of the reader to recognize the words rapidly and in part to his failure to understand what he is reading. As far as I know the best plan to follow is to give such a reader, or the whole class or school, if they "call" words, drills upon speed in reading. They should read from books that are easy to understand and that contain simple words, and should be stimulated to read as rapidly as possible. These selections should be read over and over again at a high rate of speed, until the pupils have learned how to read something without calling words. The skill so obtained can then be carried over to the ordinary oral reading material.

Mumbling. This defect can be helped very materially if, again, the reader realizes that he has an audience. When he selects something for the pupils to hear, something that he likes, something that they will like and that they do not know, and when he finds, by the teacher's bringing it out from the class, that they do not understand, he will begin to think about his articulation and enunciation. People mumble when, from embarrassment or other causes, they are not trying to get other people to understand them. They merely talk. But when the desire to convince is born, the effort to cure the mumbling increases and the results are close to realization.

Better Expression. One common criticism made by teachers after the pupil has read, and when it is his business to say something, is, "Yes, but see if you can put more expression into it," or, "Try again and see if you can do better." Two more silly criticisms cannot be found, for the boy cannot put more feeling into it than he feels inside and a command will not make him feel more. When he is

told to read better he has no idea how to do it. Both criticisms are too vague. It is better by far for the teacher, if he wants better expression, to go over the selection again with the class so that they will feel its spirit more; then, and only then, will the class put more expression into the reading of the selection.

Personally, I am of the opinion that for grade reading the standard ought to be set at plain, rather than at dramatic, reading. If the boy seems to understand what he reads and reads it intelligently, enough has been accomplished. This means that in many selections with strong emotions, little attention would need to be paid to the emotional element. As a matter of fact, many selections studied by children express emotions so deep and complex that even the average adult could not feel them.

Take such a selection as — “Is life so dear, or peace so sweet as to be purchased at the price of chains and slavery? Forbid it, Almighty God! I know not what course others may take but, as for me, give me liberty or give me death!”

This feeling is so exalted and so clearly an adult emotion that grade children can appreciate it only superficially. To try to get them to read it as Edwin Booth or Richard Mansfield read it would make them highly artificial. We should be satisfied if we see that they understand a selection and read it naturally. Any additional emotion that the individual reader might express I should gladly welcome, but I should have him make no serious effort to express emotion which is not present. Let the pupil get into the spirit of a passage as fully as he can, with the aid of the teacher, and then let the emotional expression take care of itself.

4. Primary Reading

Function. The peculiar function of primary reading which distinguishes it from reading in general, is that it handles

the learning of words and word-forms. When the child has completed the primary grades, whatever else he has learned, he must have mastered the art of knowing words at sight and connecting them with what they stand for. When he enters the primary grades he has no knowledge of word symbols. When he leaves them he has quite considerable facility in the recognition of words, in eye movements, and in the mechanics of oral reading.

During these grades the rate of oral and silent reading increases rapidly up to the intermediate grades, where the child begins to approximate his maximum rate. Certain factors influence primary reading. Attendance is quite important, at least to the extent that if the student is absent more than two months out of the nine-month period in the first grade, it is extremely doubtful that he can keep up with his grade. The children of parents who speak foreign languages in the home are quite severely handicapped in learning to read the English language. Students with low intelligence quotients may not succeed. "Intelligence quotient" is a term used to measure mental ability. Children's ages are measured in two ways — mental and chronological. That is to say, a man thirty years of age may have the mind of a six-year-old boy and a child ten years of age measured by the calendar may be quite old for his years and be as bright as children usually are at the age of fifteen. We have methods of determining the mental age of children, such as the Binet-Simon tests. The intelligence quotient is obtained by dividing the mental age by the chronological age. The thirty-year-old man with the six-year-old mind would have an intelligence quotient of $6/30$ or .20, while the ten-year-old child with the mind of fifteen would have an intelligence quotient of $15/10$ or 1.5. The normal child would have an intelligence quotient of "1." Children of low intelligence quotients do not learn

to read so rapidly as do those of average intelligence, or higher.

Subject-Matter. Authors of primary readers have a wide field from which to select the material through which they will teach word recognition and the technique of reading. They usually observe three principles of selection. Clearly the material should be *interesting* to children since interest increases effort. Generally speaking, it is better to select *easy* rather than difficult material upon which to work and on the whole material which results in *action* is likely to prove to be stimulating. In brief, the content of primary reading should be interesting, easy, and full of action. Some illustrations of material of this sort may be summarized. Most of the early school readers chose common objects with monosyllabic names that were easy to spell, such as *ox, cat, fan, dog, man*. More recently, however, we find use being made of Mother Goose and other nursery rhymes which the children already know by heart and love. Being known and loved they are enjoyed when read in books. The plays and games of children are frequently used as a basis for the reading lesson. The common experiences in the environment of children, such as the circus, the family, games, etc., are used to good advantage. Similarly, plays and games have a place in primary reading. Particularly actions expressed in sentences as, "Find the ball," "Hide the picture," etc., have an important place.

In some readers the subject-matter is quite inane and silly as viewed by the normal six-year-old child. This, however, is growing to be less and less true as we grow away from the idea that little simple words which are easy to spell are the easiest to learn. The size of the word has only a little to do with the ease of recognizing it compared with the interest of the word. That is to say, an interesting

word that is long is easier to remember than an uninteresting word which is short, just as a very large man who is interesting to the little child is more easily recognized than the quite uninteresting little baby.

Summary. The materials of primary reading may be selected from a variety of sources under the principles of interest, ease, and action.

Difficulties. There are several types of difficulties which are met in teaching primary reading. Six of these may be mentioned.

(1) Children may be poor in word recognition. The recognition of words has some rather interesting characteristics. Recognizing words corresponds closely to the recognition of people. A child may know words without knowing the letters in them. A page of words is like a crowd of people. If you will forget the fact that you know letters and look at the words on this page you will see that they look different from one another. Some are long and some are short, some run above the line and some below. The word "the" which occurs frequently on the page has certain peculiarities which, when recognized, will enable a person who knows anything about letters at all to pick it out wherever he sees it. So with the words *a* and *is*. In some cases it is easier to recognize long words than short ones because there are more peculiarities in the word. Later on the child is able to recognize the difference between words like *house* and *horse*, which in general appearance are very much alike.

This procedure is quite closely parallel to that of recognizing people. There are large people and small people, blond and dark people, blue-eyed and brown-eyed people, boys and girls, men and women, and so on. The child is able to distinguish between these people and call them by name without being able to state what is the color of their

eyes or their size or the shape of their noses. Even though he does not know these details he can, from a group of people, pick out those whom he knows. Similarly, when the child is confronted with a page of reading matter he is able to pick out words simply because they look different and not because he knows just what the differences are. It is obvious, therefore, that children will have difficulty in word recognition when they are not quick at distinguishing between words and remembering the appearance of those that they have met.

(2) Children may not have independence in working out new words for themselves. When a bright child has met one hundred words he is beginning to distinguish and can make a very good guess at what another word may be, but if he is not particularly bright he may be quite helpless in his guessing. In this case he has to be taught each word by itself and this becomes a very laborious task for the teacher. Methods of curing this will be taken up later when we discuss phonics.

(3) A child may be very slow in his recognition and pronunciation of words. In that case he does not know them well enough to pronounce them rapidly. Drill upon speed and thoroughness of recognition are the methods used in handling this difficulty.

(4) He may have poor expression due to the fact that he "calls" words rather than reads naturally. In reading "I went to the fair," he may pause before each of the words when as a matter of fact he should make the statement, "I went to the fair" as a single unitary idea. This is partly taken care of by what is spoken of as the "look-say" method. A child who calls words in the first grade will, when this method is used, be asked to look at what is said, then turn from the book or the board and repeat it as if it were a sentence. This difficulty can be easily cured by

the teacher if he remembers that the sentence rather than the word is the unit of thought.

(5) Children may mispronounce words. This is handled easily by having immediate drill upon the correct pronunciation. When the word is first taught it should be pronounced correctly and time should be taken to see that the pronunciation of each individual child is correct.

(6) In primary reading children frequently repeat the words. This is due to lack of skill in recognition and can be cured by attention to speed.

The Sentence Method. Historically, three methods have been used in teaching primary reading. The oldest method was the *alphabetic* method. The children were taught their letters. The theory was that since the letters are the element of the word they should be taught first. However, a fallacy was discovered in this theory. Children are not interested in letters as such. The letter *a* or *m* means nothing to them. They are not keys to action or to interesting ideas, so because of lack of interest it was found that the children did not learn their letters with great facility.

Because of this difficulty, the *word* method was introduced. It was discovered that children could recognize the difference between "dog" and "cat" just as easily as they could learn to distinguish between "d" and "c." It was observed further, as has just been said, that people in recognizing words do not need to know the letters of which they are made, so children were taught such words as "candy," "knives," "ropes," "balls," "dogs," etc., and were found to learn them more rapidly because the objects for which the words stood were much more interesting than the letters which occupied their attention when the alphabetic method was used.

As time went on, experienced teachers learned that chil-

dren could learn sentences just as quickly as they could learn words. The sentence has this very great advantage — it can lead the children to perform actions. When "Roll the ball" is placed on the board they become very much interested because they are able to go through the action of rolling the ball as a reward for reading the sentence. So, at the present time, primary teachers universally use a combination of the sentence and the word method. Some words are taught and these are thrown into sentences as soon as possible. Interestingly enough, the children in this case may learn to recognize as many as twelve hundred words without knowing the letters of the alphabet. However, this does not mean that the alphabet should not be taught. It is necessary sometime during the first year to have the children recognize all the letters of the alphabet and it is wise for the teacher to have the children memorize the letters in the order in which they conventionally appear in the alphabet. They should be memorized glibly because in using the dictionary and in many other situations they need to know the letters in the order in which they occur. Some teachers find it wise to have children in the second and third grades and even in the first, memorize the alphabet backward as well as forward — thus: *zyx, uv, uts, rqp, onm, lkj, ihg, fed, cba*.

In using these methods it is customary to begin with action words. A few names of common actions should be selected by the teacher, such as find, hunt, roll, walk, run, skip, etc. Then objects may be connected with these as "Find the ball," "Find the cap," "Find the crayon," and so on. These words are written on the board and the children perform the indicated actions. To get speed in word recognition the words so taught may be placed on flash cards which are flashed before the children while they pronounce the word as quickly as they see it. Simple sen-

tences may be placed upon flash cards, also. All the teacher needs to do is to secure some pieces of paper about 6 x 9 inches in size and write upon them whatever he wishes to drill upon.

Children seem to turn rapidly from the script which is put on the blackboard to the words which are printed in the book so that the transition between the board work and the textbook work is easy.

Phonics. As long as children are being taught individual words by the teacher word recognition is a fairly simple matter, but there soon comes a time when the teacher cannot teach every word and when the children, if properly instructed, can develop independence in "guessing" at words for themselves. Many bright children can soon learn to guess at new words from the context and eventually become good readers without any training on the part of the teacher beyond the initial teaching of words and sentences. For the average child, however, assistance in breaking words up into their elementary sounds is necessary. This is done by means of phonics. The *phone* is a letter sound rather than a letter name. If we break a word up into the letters of the alphabet, thus — c-a-t — and pronounce each of the letters slowly, we secure a compound which sounds like this — see-a-tee. This, when pronounced rapidly, gives us a word like "seeatee" which does not sound in the least like "cat." When we use the letter sounds rather than the letter name, however, we say that the sound for "c" is "kuh," for "a" is "ah," and "t" is "tuh." "Cat" then becomes "kuh-ah-tuh." When this is pronounced rapidly, we at once get "cat." Obviously, therefore, by learning the sounds, independence in recognizing words can be developed in the child.

This is known as the *phonic* method. After the children have been taught from the board and books by the word

and sentence method for a few weeks, it is customary to begin to introduce phonics as an independent drill practiced for ten to fifteen minutes at a time. The words which the children have already learned are broken up and new words that they have not yet become acquainted with are given them to give them the opportunity of guessing at the correct sound.

Primary supervisors report that there is a great danger of spending too much time upon phonics. They state that many teachers who feel that they must teach phonics every day have classes in which the exercises are quite deadly dull. Supervisors are convinced of the fact that phonics needs to be taught, not as a subject worth while for itself, but merely as an aid in recognizing words, and that no more attention needs to be paid to it than is necessary to have the children read the material in the regular reading lesson with skill. In phonics, as elsewhere, it is necessary to remember that what the children learn in school is of importance not so much for its own sake as for its use in helping them become acquainted with the fundamental facts of life and the tools which civilization has developed.

Summary. In primary reading the important task is to teach the child how to recognize words. This is done by bringing him in touch with interesting and easy material, and by study of the difficulties which he faces. A combination of the sentence and word method is most satisfactory. This should be supplemented by an intelligent use of phonics.

5. The Study of Literature

In the grades, reading and literature have usually been considered together because reading textbooks usually consist of literary selections. Not all the history and geography studied from day to day is read in class, but nearly all literature is.

In the reading process, literature is connected with both

silent and oral reading because when it is read the pupil has to understand it and feel its spirit. This, it seems to me, is the general problem of literature in the grades — how to understand the ideas and feel the spirit of a selection from literature.

Literature differs from printed material which is not literature in two respects. The chief difference is the æsthetic element. A piece of reading may or may not be called literature. It is not worthy of the name of literature if the form of expression is not artistic or if the content is not beautiful. Ugly things may be described in an artistic manner, but ordinarily literature deals with beautiful rather than ugly material. Usually, also, the person who writes literature rather than mere reading material, expresses some feeling about the thing that he writes. A scientific treatise dealing with abstract subjects which the author writes upon in a purely impersonal way as a statement of fact, is not strictly literature. Some sort of personal feeling has to be expressed. This is very well expressed by the oft-repeated statement of the mathematician who, when he read

“Half a league, half a league, half a league onward,
Into the valley of death rode the six hundred,”

remarked, “Why didn’t the fool say, ‘A league and a half’”? He missed entirely the feeling of the author that prompted him to express the tragedy of the situation which faced the “six hundred” in having to rush uselessly “into the jaws of death, into the mouth of hell.”

Summary. Written material becomes literature when it expresses emotional ideas in beautiful form.

Problem. One very striking fact about literature is that every unit, be it a stanza or a book, is solving some problem and answering some question that experience has put to

the author. For instance, in Longfellow's *Psalm of Life* the author is answering the question, "Is life an empty dream?" and he gives his arguments for and against it. So every poem answers or tries to answer its own question. This is one function, perhaps the function, of literature — to solve certain problems and answer certain questions.

Although the literary selection contains an answer to a question, the reader may read the selection without bothering to get a definite idea of the answer but if he is properly guided he will try to get a clear conception of both question or problem and answer or solution. For instance, in the *Psalm of Life* the reader may read the poem and enjoy it, and when he is through say to himself, "Yes, I guess he is right — life is more than an empty dream," without being able to give the reason for thinking so. But another more inquisitive reader may, in his reading, search for the answer. In doing so he, in effect, outlines the poem, and he finds that Longfellow's answer to the question is that life is not an empty dream for two reasons. First, we live to help others, and second we must make haste to help them. He finds that the poem is divided into about four divisions — stanzas 1-3, 4-6, 7-8, and 9. Each of these makes the answer clearer. The first group states his answer boldly. The second shows the necessity for haste; the third shows how we can help others; the fourth urges us to action.

While the ideas are being discovered we feel the beauty and the emotion expressed. We do not study feeling consciously to any great extent in the grades. Feeling comes like the odor of the bread that we buy. When we buy bread we do not purchase the odor. We want something to eat in order to live; the odor is thrown in as an important by-product. So, in literature we get the idea, and the feeling clings to it like an aroma. The one way of developing feeling is to have the children fully understand

the author and gather as much of the feeling as they can. If the pupil is highly emotional and sympathetic he will get a great deal of feeling out of it. If he is not highly emotional he will get much less. Moreover, if the teacher feels the emotion deeply the children will catch it from him, but if he has no feeling about it he cannot transmit any through himself to the children. In that case, they will have to get it directly from the author, if they get it at all.

Beauty. As we have just said, literature is different from mere reading in that it obeys the laws of beauty. I may say, "When I stand on the seashore and see the waves breaking, I sometimes wish that I could express the thoughts that come to me." This is a statement of mere fact, but when Tennyson says,

Break, break, break,
On thy cold grey stones, O Sea,
And I would that my tongue could utter
The thoughts that arise in me,

he gives us literature, he adds beauty and feeling to the bald fact.

The feeling of beauty is not something that can be commanded, it grows and develops. But the teacher can cultivate an appreciation for the beautiful by paying attention to at least two devices. In the first place, he can spend a good deal of time building up the mental pictures. For instance, in the words, "Break, break, break, On thy cold grey stones, O Sea," a picture is suggested. The teacher can by illustration and conversation get the pupils to imagine themselves standing on the shore watching the waves breaking on the stones, get the significance of the word "grey," make the picture clearer and show the significance of the word "cold." To get the feeling he can talk about the different moods, he can explain how the mood that we are in makes things appear different.

He may explain how a man in a happy mood might look at the same scene and not see cold grey stones but perhaps the cheerful sparkle of the waves as they broke against the stones. It pays to make haste slowly in order that images that are not beyond the children's comprehension may be built up by deliberate and daily study. The teacher needs to use discretion in selecting the images and literary pictures upon which to spend time for analysis.

In the second place, the children can be asked two questions with a wide range of variations — "What do you like best in the selection?" and "Why?" The important element in appreciation is to have the children become conscious of the things they like. This trains the pupils to be young but sympathetic critics, and out of this, appreciation grows. The expert critic asks himself only these two questions and he seeks to answer them profoundly. The child is put into the appreciative attitude when he asks himself these same questions and answers them simply in his own words.

The teacher may reinforce the pupil's likes and dislikes or may modify them by his own opinions, in which the pupil has confidence, but the teacher should not talk too much about beauty and feeling. They grow faster when they are not talked about too much and when the standards are not set too high.

Subject-Matter. In selecting subject-matter for literature study the fundamental principle of interest is the one to follow. Care must be taken in the preparation of text-books that selections which are within the comprehension of children and which stimulate their interest may be brought to their attention. The failure to follow this principle with intelligence is largely responsible for children's dislike of literature in school and their failure to read it after they leave school. Many teachers feel that the

children should be made acquainted with the classics irrespective of interest. The intelligent teacher seeks to select from the classical writings only those which will interest the children when they are taught them by an efficient and forceful teacher.

Some studies have been made to discover which selections ordinarily read by children are of greatest interest, and the results of the study of Uhl are given in the references at the end of the chapter.

Grading. In deciding upon what literature should be taught in each grade we have two general principles — the principles of interest and difficulty. The literature studied should be interesting to the pupils and should not be too difficult in its expression. Browning would hardly be taught in the primary grades, partly because his subjects are not interesting to children in these grades but chiefly because his form of expression makes him difficult to understand. The beginning teacher naturally has to rely largely upon the textbooks with which he is provided, but as he grows in experience he will learn to omit or lightly pass over those selections in the readers which are neither interesting nor easy to read.

Appreciation. In the study of literature the chief objective of the teacher is to develop a love of literature in the pupil. If he can make the pupils fond of reading literature his work is done because after they leave school their love for the subject will induce them to read an increasing amount of classical material.

I have already mentioned two or three methods of developing appreciation. The problem idea should be developed. Children should see that the author is trying to answer some question. Time should also be taken to dwell upon images that will appeal to the children. Questions should be asked the children concerning the things

that they like and do not like and their reasons for likes and dislikes. Discussions may also be held upon these topics. Children may be asked whether or not they agree with the solution that the author has developed and may be asked to give their reasons. When they differ about what they like and do not like they may argue the matter out among themselves. Particularly useful in developing an appreciation of good literature is the practice of reading by the teacher who himself loves good literature. Long before people could read they were brought into contact with good literature through songs sung by minstrels and professional singers and through traveling readers. The natural vehicle of literature is the voice. It is essentially a matter of oral reading rather than of silent reading. Such being the case, the teacher who can "lend to the rhyme of the poet the music of his voice" has control of a powerful instrument for developing appreciation.

Memorization. It is wise to have pupils memorize carefully selected topics. The selection should be made with care because only those poems that are of interest now, and will be of interest in the years to come, should be memorized. In memorizing the "whole" method should be used. To illustrate what is meant by the *whole* method may we indicate the usual method of memorizing poetry. Suppose the selection to be memorized is the *Psalm of Life*. This consists of thirty-six lines. The common method of memorizing is to learn the first line first and then go on down, thus:

Tell me not in mournful numbers,
Tell me not in mournful numbers,
Tell me not in mournful numbers,
Life is but an empty dream,
Life is but an empty dream,
Tell me not in mournful numbers,
Life is but an empty dream,

For the soul is dead that slumbers,
For the soul is dead that slumbers,
For the soul is dead that slumbers,
And things are not what they seem.
And things are not what they seem.
And things are not what they seem.
For the soul is dead that slumbers,
And things are not what they seem.
Tell me not in mournful numbers,
Life is but an empty dream,
For the soul is dead that slumbers,
And things are not what they seem.

In criticizing this method one important fact is to be borne in mind. Since memory is aided by the association of words, the best association would be to connect the last word of each line with the first word of the next line, thus — “numbers” should be connected with “Life,” “dream” with “For,” “slumbers” with “And,” and so on, but that is not the connection set up in this illustration. By looking at the foregoing repetitions you will find that the connections of “numbers” are “numbers Tell” “numbers Tell,” “numbers Life” and the connections of “slumbers” are “slumbers For” “slumbers For” “slumbers And.” Psychology makes the point that the connection “numbers Tell” and “slumbers For” are harmful to memorization by setting up wrong associations, so they have suggested the “whole” method which safeguards the correct associations and actually enables one to memorize more rapidly in the end. By the “whole” method children will read the thirty-six lines of the *Psalm of Life* over once, then they will read them all over again and again and again until the whole is memorized. If it is discovered that some parts cause particular difficulty special repetition of them may be given, but the material should be read from start to finish over and over again until all is learned.

One would think, off-hand, that this method requires a

greater length of time, but it actually takes less. Little children may feel that they are not getting anywhere and may prefer the customary "part" method, yet if the teacher knows how to use the "whole" method himself he can induce the children to use it as rapidly as they can be weaned from the "part" method. They will soon become used to the temporary discouragement that is due to the frequent readings which are necessary before any part sticks completely.

Dramatization. Simple dramatization is an excellent means of teaching literature. It makes the ideas more clear, furnishes a good reason for reading carefully, and it impresses the dramatized ideas upon the memory. Children love to dramatize and any teacher can give instruction in it. The children can easily make up their own lines and it is better to have a simple setting and properties than elaborate equipment. Children in everyday dramatization need not, and ought not, memorize the material closely. They should talk it, give the sense rather than the exact words, though it will be found that if left to themselves they naturally use many of the words of the story. For detailed directions about how to guide children in dramatization the reader is referred to the references at the end of the chapter.

Summary. The teacher of literature has for his most important objective the development of appreciation and love for literature. Every selection of literature should be looked upon as solving an interesting problem and beauty and feeling should be developed as a by-product. Material should be graded according to interest and difficulty; in memorizing the whole method should usually be utilized, and dramatization and the oral reading of the teacher are of first importance in developing appreciation.

REFERENCES FOR CLASS READING

*BETTS. *Class-Room Methods and Management*, pp. 132-64. (Reading material by grades.)

- BRIGGS and COFFMAN. *Reading in Public Schools*, pp. 45-91. (Primary reading.)
- FINLAY-JOHNSON. *The Dramatic Method of Teaching*. (Directions for dramatizing.)
- FREEMAN. *Psychology of Learning*, pp. 67-97. (Psychology of reading.)
- *GERMANE and GERMANE. *Silent Reading*. (Instructions for each grade.)
- GRAY. *Eighteenth Yearbook of the National Society for the Study of Education*, Part II. (Summarized directions and principles for oral reading.)
- GRAY. *Sixteenth Yearbook of the National Society for the Study of Education*, Part II, pp. 16-32. (Reading experiments.)
- HALIBURTON and SMITH. *Teaching Poetry in the Grades*. (Illustrative lessons.)
- *JENKINS. *Teaching the Elementary School Subjects*, edited by Rapeer, pp. 163-180. (Reading in the lower grades.)
- JUDD. *Reading — Its Nature and Development*. (A study of eye movements.)
- *KENDALL and MIRICK. *How to Teach the Fundamental Subjects*, pp. 8-60. (General.)
- McMURRY. *Special Methods in Reading*, pp. 245-81; (class methods) pp. 282-301. (Illustrative lessons.)
- MUNSON and HOSKINSON. *Sixteenth Yearbook*, Part II, pp. 33-59. (Reading material used in five or more of fifty American cities, arranged by grades.)
- PHILLIPS. *Modern Methods and the Elementary Curriculum*. (Reading in the primary grades.)
- SHERMAN and REED. *Essentials of Teaching Reading*, pp. 150-65. (Exercises for the vocal organs.)
- *STONE. *Silent and Oral Reading*. (This is the most important single book on the list for teachers to secure.)
- **Twentieth Yearbook of the National Society for the Study of Education*, Part II. (Report of the Society's committee on Silent Reading, E. Horn, chairman. Important summaries are made by Theisen, Burgess, Gray, O'Brien, Hoover, Yoakum, Germane, Greene, Packer, and Starch.)
- UHL. *Scientific Determination of the Content of the Elementary Course in Reading*. (Lists of selections most interesting to children.)
- WILSON. *Motivation of School Work*, pp. 59-70. (Motivation of reading.)

CLASS QUESTIONS

1. Study the reading of the children of the third-grade class. State what the difficulties of the poor readers are so far as you can tell.
2. Test a group of pupils (or students in your own class in teacher training school) with a selection fairly easy for them to read and note their different rates of speed.

3. Select a chapter in history and prepare the following kinds of tests (five questions in each): completion test, true-false test, recognition test.
4. Select one poor reader and study him carefully to see what is wrong, then work with him until he improves.
5. Give instances from your own experience in which an appreciative audience of one or more made you do your best reading, and where an unappreciative audience dampened your enthusiasm and affected your reading.
6. An actor is a reader; what are the standards by which one would judge the success of an actor?
7. Give instances showing the practicability of using the impression made by a reader upon the class as a test of good reading. How did the teacher find out what this impression was?
8. Give examples of ten selections in readers that describe experiences and situations too old for the children who read about them to understand.
9. What would you do with selections that are beyond the children?
10. Name ten poems about children that commonly appear in the grade textbooks that are not suitable for children. Explain why in each case.
11. Take a reader for fourth-grade children. Glance through it and classify the selections into the following three groups: (1) those assuredly suitable for fourth-grade children, (2) those assuredly unsuited to fourth-grade children, and (3) those about which you are in doubt. What are the figures? What will you do with group 1? With group 3?
12. Should the rural teacher try to teach gestures? Why?
13. In what grades do fairy stories seem to belong? Mother Goose rhymes? Stories of adventure?
14. What is the usual age for dime-novel reading? What are the good elements in dime novels that make them attractive to boys? What are the bad elements? What books have the good elements of the dime novel without its bad elements? Do boys like them?
15. If your school board will not give you money for supplementary reading, what are you going to do about it?
16. Do you think a primer made up of children's jokes would be interesting to them? Give three examples of what six-year-old children thought were jokes.
17. Do you believe that a large amount of reading out of many books is necessary to good reading? Why?
18. Give three examples in which a person speaking naturally does not speak effectively.

CHAPTER VI

DRAWING

1. Subject-Matter

THE term "drawing" is used in the schools to include more than it strictly means. It embraces both the developing of the ability to portray ideas, and an appreciation of works of pictorial art. In some courses of study it includes other branches of the fine arts, such as modeling and the appreciation of sculpture, architecture, etc.

The Function of Art Study. The parallel between drawing and language is very close. In drawing, as in language, the object is to communicate some value to other people who, it is expected, will be interested to some degree. When a stranger asks for directions we may either tell him in words how to proceed or we may draw a diagram. The designer may either describe what a costume will look like or he may draw a sketch. The poet and the artist, sitting by the river, may express the same feelings through different media. The poet writes a poem and the artist paints a picture. Speaker or artist, each has a choice of means of communication. In either case he communicates something that he thinks is worth while. The essential difference between language and drawing is merely one of the medium through which communication is carried on. The speaker uses words and the artist uses color, tone, and line. The words are combined into essays and novels, poems and plays. The colors, tones, and lines are combined into landscapes, portraits, and so on.

There is a further parallel between these two modes of expression. Both writer and artist follow rules of composition. The artist makes an outline; so does the writer. The writer introduces detail according to rules and standards, as does the artist. When language is on the level where it becomes literature, and drawing is of such quality as to be called art, the translation of each into experience is likewise parallel. The reader of literature attempts to relive the writer's experience. The observer of the work of art tries in like manner to decipher the symbols which the artist has used to express his idea so that he may relive his experience with him. And just as each poem solves a problem and satisfies a need, so in like manner does a picture express some central idea which constitutes its meaning. The difference is merely one of medium. The process of reading a poem is essentially the same as that of "reading" a picture.

Because of this close relation between language and literature on the one hand and drawing and pictorial art on the other, the principles that have been applied in the last few chapters will, in the main, apply to the teaching of drawing. What differences occur are largely due to the fact that we substitute color and form for words.

The function of drawing then, is to communicate values through form and color to an interested audience. Like language, it is a vehicle of expression. As "literature," it is a means of gaining experience through appreciation. For the one who draws, drawing is a means of expressing an idea, while for the one who views the drawing it is a means of gaining an idea from the artist.

The parallel between drawing and speech is very well illustrated by Lukens in the following table.

The development of drawing should show the same stages as the development of speech, suggested as follows:

SPEECH

1. Automatic cries and reflex or impulsive sounds.
2. Imitation of sound, but without meaning; child babbles when addressed.
3. Understands words, but does not speak beyond such words as "mama," "papa," etc.
4. Repeats words as mere sounds when they are said to him.
5. Uses words to express his thoughts.
6. Studies grammar and rhetoric.

DRAWING

1. Automatic and aimless scribble.
2. Scribbling localizations and imitations of movements of other persons' hands.
3. Understands pictures, but does not draw beyond the simplest localization of features by scribbling.
4. Copies from others to see how to get effects in the use of lines.
5. Picture writing, illustrated stories, scenes, etc.
6. Studies the technique of drawing, perspective, proportion, shading, etc.

Drawing is a more vivid vehicle of expression than language in two ways. In the first place it is more graphic; that is, it shows the meaning more quickly and clearly. The newspaper cartoon is an excellent example of this. For instance, in February, 1913, the world was shocked and impressed by the splendid heroism of Captain Scott and his companions at the South Pole. Many columns of newspaper copy were written about their actions, and the diary of the dead leader was published and widely read. But a single cartoon by McCutcheon in the *Chicago Tribune* expressed more at a glance than pages of written material. The artist showed a low, level, ice-covered plain, a dark sky, an ice-covered shaft from whose top floated the Danish flag, and at whose base drooped an English ensign, while recumbent in a position of utter weariness the bodies of four men made the nuclei of the little hummocks of snow which covered them. A reader can get nearer to the heart

of the news in less time by following the cartoons of a good newspaper than by reading the editorial columns. What holds true for cartoons is true for all art — it condenses volumes into a few lines and tones.

In the second place, drawing is a better vehicle than language because it is more universal. "One hundred people read pictures for every one who reads a book." G. Stanley Hall says:

The American child needs more, not less, pictures. How, e.g., Homer, not to say Virgil, the Greek dramatists, Shakespeare, and the great masterpieces, would be vivified by an abundance of even cheap reproductions of the best pictures with which artists have illustrated classic story! History, too, has been visualized, not only by portraits, but by scenes of battle, congresses, and other pictorial events which have idealized and could give great enhancement of zest to its dogged pages. Science, too, cannot have too many illustrations. Our geographies, especially illustrated as they are now, need a great profusion of additional views of mountains, valleys, shores, seas, landscapes, towns, streets, and everything else which can be made so vivid as almost to take the place of travel. The stereoscope is now so developed that groups of scenes and hundreds of binocular pictures of, e.g., Palestine, Egypt, India, the Rocky Mountains, etc., give the spectator an almost complete sense of being present and of actually gazing upon landscapes, cities, or ruins from various points of view which are often indicated on the map, one after another, so that one knows the point of the compass toward which he is looking, etc., until the illusion of actually seeing everything is almost complete, and after a careful course of such pictures he almost seems to himself to have visited the locality. The illusion of depth, perspective, and the isolation of indirect vision are the essential factors of this seeming transposition. If some time in the future these proxy trips should be supplemented by moving pictures and phonographs, as they are sure to be, then the pupils of, e.g., the geography class will take ideal trips through foreign lands, see savages, jungles, industries, and all kinds of life without leaving the classroom.

Summary. Drawing parallels both language and literature because it is both a vehicle of expression for the artist and a means to getting experience from the artist. In some situations it is a better vehicle than language because it is easier to understand; and being easier, is more widely used. In drawing, the

artist has an idea which he wishes to express to an audience that he believes will be interested, and as a student of pictures the observer attempts to relive the experience of the artist.

Ideals. In the teaching of art, two ideals are of major importance. The first and most important of these is the appreciation of the beautiful in art. When the child has finished his course in drawing he should have developed a taste for the beauty that is found in color and line through some understanding of the principles of rhythm, balance, and harmony. In addition to this he should be possessed of an amateur ability to express ideas in black-and-white and colored drawings. He is not expected to be a finished artist, but he should have some simple facility to express his ideas without embarrassment and with pleasure.

The Teacher's Objectives. These two ideals constitute the teacher's objectives. That is to say, it is the business of the teacher to develop in children a love for beautiful pictures and some understanding of why they are beautiful. It is also the duty of the teacher to develop in his pupils some skill in the use of the pencil and colors, both in the drawing of pictures and in the applications of art to home decoration and clothes. The child should be led to desire to add beauty to whatever work he does.

The objectives to be sought for in each grade are very well described in some of the books referred to at the end of the chapter. Particular attention is called to the standards as described by Sargent and Miller. These standards are worked out in suggestive detail, but are too long for quotation.

Diagnosis and Correctives. As in spelling and in handwriting, so in drawing it is a routine part of the teacher's duties to discover the mistakes the children make in their drawing and present specific correctives for them. This is easy to do because little children love to draw and paint.

In doing this they obviously make mistakes and the teacher corrects these one by one. Unfortunately no lists of difficulties, such as those found in language and spelling, have been printed by the teachers of art, and therefore each instructor has to make his own diagnosis.

A course of study based upon diagnosis is said to have a psychological organization as opposed to the logical organization. If a course of study is organized logically the elements of drawing will follow one another in logical sequence. In that case we should probably teach lines first, then circles, combined with color mixing, to be followed by other principles and elements, so that finally having learned the technique the children may be able to draw something. This corresponds in reading to teaching the letters first, then words, and then sentences. Upon this plan drawing was taught in the schools for many years.

To-day, however, it is not organized in this way because that is not the way in which children learn best. They are not greatly interested in lines, curves, and colors. They are intensely interested in drawing when they can use it for its intrinsic purpose; they love to draw where the drawing expresses some idea of their own. If they are asked to draw a picture of what they think or know they draw gladly, although their lines and colors are probably very faulty. The drawings of children in the primary grades are as inartistic as their conversation is ungrammatical. So the method of teaching drawing exactly parallels the method of teaching language. The teacher lets the pupils draw and makes corrections as they are needed.

There can be no logical order of presentation of drawing technique. The order is psychological. Facts and methods concerning drawing are introduced as they are needed. The children draw to express interesting ideas and the teacher corrects at the psychological moment.

The Elements of Drawing. To express ideas through drawing we have certain forms, just as in language we have words, punctuation marks, grammatical rules, and the conventions of spelling. There are two fields in drawing — representation and design. The former deals with the representation of ideas already found in nature, and the latter is concerned with the creation of new ideas to express experiences not reproduced from nature. These correspond in a general way to the forms of language known as exposition, narration, description, and argument.

There are also three tools that are used in both representation and design. These are tone, color, and form. Color is composed of the five fundamental colors—red, yellow, blue, green, violet. Tone refers to lightness and darkness, and form is self-explanatory. That is, to express any idea it is necessary to use some color, to give it some shape, and some degree of brightness or dullness. Then, as said above, the foregoing are combined according to the laws of composition in each field. These laws are known as the laws of balance, rhythm, and harmony, and are discussed in any work on art for teachers.

Each of these rules and items is intended to make the technique of art better and consequently the artist who wishes to express his ideas faithfully on canvas must utilize them as the case requires, from moment to moment. Because of this, the pupil who seeks to become an effective artist must be taught all these rules and items if his efforts are not to be in vain. The extent to which they can be taught in the grades is determined, in the last analysis, by the mental and manual maturity of the children. It is futile to introduce refinements of technique which the children cannot understand.

Summary. Drawing is organized in such a way that by following its rules the student may learn to express himself with effec-

tiveness. But the degree to which this effectiveness can be given in the grades is dependent upon the maturity of the children.

Illustrative Drawing. One of the most fundamental problems in the teaching of art is the provision of ideas which the children may express in pictorial form. When we study the pictures of great artists we find that some are drawn, not so much for the ideas as for the technique which they represent. An artist may draw a picture to exemplify a new method of getting some effect in color. Clearly, such technical studies cannot be used in the grades. Again, when we study pictures, we find that the master has attempted to express the feelings of a mature person. Obviously children cannot appreciate these. What we have to find are simple ideas that are within the comprehension and field of interest of the children.

For this purpose the best field is the illustration of themes, a field which has been very well worked out by Sargent and Miller. The possibilities of illustrative work are unlimited. As we run over their book, which is listed at the end of the chapter, we find that their children in the study of Indian life in the first grade sketched wigwams, etc., and made drawings of such phases of Indian life as hunting, cooking, and fishing. In addition they worked out designs for the cover of their "Indian Book." They drew designs of Indian pottery and costumes. In the second grade, in connection with work upon the Arab, the children drew pictures of camels, palm trees, and tents, illustrations for original stories and covers and designs. In the third grade the Vikings were studied and illustrations were drawn of ships and dragons, weapons, shields, warriors, and landscapes, with even some attempts to depict the battles of the Norsemen. In the fourth grade they made use of Greek life, in the fifth of Roman, and in the sixth grade of pioneer life. Landscaping of an interesting sort was taught in connection

with geography. The study of the geography of South America was made the basis for illustrative work. Maps were drawn, and a study was made of the coffee plant. Likewise in studying Africa drawings were made by the children of the houses, the animals, and the trees of the tropical jungles. Literature was used as the basis for illustrative drawing. Poems and stories were illustrated. The children were asked to select subjects for illustration.

The possibilities of illustrative drawing are numberless, and they are such as can be used by the teacher who knows very little about drawing himself. Such a teacher clearly cannot develop his pupils into finished artists, but this should not prevent him from stimulating the children to use the pen, pencil, crayon, and even water colors as a medium for expression. Many children have a native talent for drawing which develops of its own accord without instruction, and even the children who do not have native talent may gain a great deal of pleasure from their attempts to draw, even though the results be relatively inartistic.

Summary. Illustrative drawing is the best means for providing the children with subjects for drawing, and it can be used to advantage by teachers who have little artistic proficiency.

Standard Tests. Some attempt has been made to provide standard tests for drawing ability. One of these is the test by Kline and Cary which provides graded scales for testing ability in representation. In one scale a house is used as the subject, in the second a rabbit, in the third a running boy, while in the fourth the subject is a brush drawing of a tree. These scales are arranged in twenty steps. However, so far as the inexperienced teacher is concerned, the standard tests are largely of academic interest. They are not worked out to a stage where they can be used with the same practical efficiency as handwriting and spelling scales.

The Teacher Who Cannot Draw. I do not think it is wise for the teacher who has not studied drawing under a good instructor to attempt to teach it. But even though he cannot teach the technique of drawing, he can perform two very useful functions. *In the first place*, as has just been said, he can encourage the children to illustrate their ideas by means of the pencil. Obviously, in arithmetic the children can, with advantage, draw plats and diagrams while in literature, geography, and history, they can illustrate in black and white the scenes which are presented through the medium of language. *In the second place*, he can perform the most important function of all in teaching the appreciation of art. In life outside of school there are a thousand people who appreciate pictures to one who is a skilled artist. Consequently, when children leave school they may get a great deal of enjoyment out of pictures even though they cannot draw a line. A teacher who cannot draw, but who knows how to study pictures, is of more use to society than one who can draw excellently but cannot develop in the children a love for good pictures. Between the expert teachers of art and those with absolutely no ability, the great majority of teachers lie. That is to say, there are many teachers with a love of beauty in art who have not received instruction in the subject. For these teachers, the task of developing appreciation is comparatively easy, because their natural love for the subject will lead them to get such an understanding of the simple principles of balance, rhythm, and harmony, as will enable them to explain to the children why some pictures are good and others are inartistic.

2. Teaching Drawing

Motivation. As we have seen in former chapters there are usually three possibilities in finding the motive for

drawing. Young children all have an immediate interest in drawing. They like to use the pencil and draw the human form, plants, animals, and scenes. In the latter grades their higher standards of discrimination, which lead them to be somewhat ashamed of their work, cause the interest in drawing to weaken. But this interest can be kept alive through mediate interest, by having them use the pencil and the brush to make clear those ideas which they wish to express. Of course, in the drawing class it is always possible to appeal to such generic motives as the making of good grades.

Most important of all in stimulating interest in drawing is the selection of interesting subjects. The interest in drawing is exactly parallel with the interest in language. In the case of language children chatter and talk with volubility and in drawing they scribble and draw interminably. Just as in the case of language, facility of drawing comes only with much practice. Children should be given almost unlimited opportunity. We frequently allow children to draw by themselves to keep them quiet, and consider that otherwise it is a waste of time. It is not. While a boy is drawing he is getting more education than if he were learning to spell "phthisis" if he is expressing what he feels and sees, and he is gaining such facility in doing so that if he be given practice enough with the proper instruction he will eventually rather turn to his pencil to sketch an idea than describe it in words. While in the primary grades children can do little but illustrate ideas, illustrations should not be confined to these grades alone. I am a firm believer in the plan of making drawing a part of every assignment that can be illustrated in every grade.

Nature also provides a great mass of interesting subjects. Children like to draw animals, they enjoy the

tracing of leaves, the massing of trees, the filling in of landscapes in color. Huge lists of these subjects can be found in any textbook on drawing. Then, too, special occasions provide material for drawing. Washington's Birthday, Memorial Day, Thanksgiving, Christmas, and May Day, all produce a strong motive, not only for drawing but for other forms of construction work. The decoration of the schoolroom is likewise interesting. In the autumn, leaves, trees, branches, grain, and corn may be used. In placing these objects around the room, upon the walls, and in receptacles, much good study of design and decoration can be accomplished. The hanging of a new picture becomes an occasion for the training of taste and the selection of blackboard drawings or stencils provides training in artistic standards.

Summary. The selection of interesting topics for drawing is probably the most important step in gaining interest in the subject. All interesting subjects should be canvassed by the teacher in making his selections and especially every opportunity for graphic illustration should be seized by the teacher whether he himself can draw or not.

Drill. From time to time, as occasion demands, certain methods of the subject need to be drilled upon, and in this case the rules for habit formation hold good. It is necessary first of all to get a clear idea of what is to be done. Then the teacher should secure attentive repetition in a happy atmosphere and the drill should be continued until the action becomes automatic.

Problems and Projects. The foregoing discussion leads clearly to a statement that drawing should be taught by the problem method, and that projects should be used wherever possible. Children do not learn drawing well where they are merely given exercises to perform. They do their best work when they have some ideas to express and when they

use their thinking powers in expressing them in the most satisfactory manner; whether the topic is that of the illustrating of such a subject as Indian life or the drawing of a single illustration for a passage in a poem the problem method is used. Drawing lends itself particularly well to project teaching. For instance, the problem of the decoration of the schoolroom is a project which can be worked out by the class as a whole. The colors to be used, the arrangement of the decorations around the walls, and numberless other details provide excellent material for the study of artistic form. As my mind runs over the possibility of the use of problems and projects I am led to the conclusion that in drawing, to use the words of Octavius Roy Cohen, "there ain't nothing else but" problems and projects. Drawing provides the best possible medium for the exemplification of the problem method. The problems are simple and natural and the technique of balance, rhythm, and harmony and the other principles of drawing can be brought in incidentally at the psychological moment, to an extent that cannot be approached in any other subject.

Teaching Technique. I shall make no attempt to present the technique of drawing in this chapter. If the teacher has learned the technique under a good instructor, suggestions are unnecessary. If he has not learned the technique under these conditions, it is impossible within the limit of the space at my disposal to teach it to him. What I must be content with here is to present the wonderful opportunities that the teacher has to open up to the children the great field of art, in such a way that even under the limited possibilities of the schoolroom they may secure a kind of pleasure and enjoyment that money cannot buy and effort cannot produce. This leads naturally to a discussion in the next section of the study for appreciation.

3. Study for Appreciation

More important than technique in drawing is artistic appreciation, for while, as said above, few people continue to draw after leaving school, and hence have little practical use for this ability, everybody is surrounded by pictures and other forms of art. Everybody may enjoy pictures. In the poorest hut you will find a few pictures. In the plains, in the mountains, in attics and basement hovels, the searcher will find some form of pictorial art and decoration. Yet few people know good pictures and good art. Upholstered monstrosities, colors that clash, cheap chromos and sentimental catchpennies decorate the walls of lovers of pictures who are not lovers of the artistic. This is the problem of the teacher — to lead the pupils to enjoy good pictures and artistic decorations.

Methods of Teaching Appreciation. *First*, if the teacher wishes to get pupils to appreciate good pictures, he must choose the pictures carefully. Not all artistic pictures are interesting pictures. Many people exclaim over some of the old masters, merely because they are told that they *are* old masters. Probably fifty per cent of all classical pictures have no more than historical interest, and consequently the teacher who surrounds his pupils with "good" pictures which elicit no enthusiasm from the children must not complain if he has given no consideration to their subjects. Pictures may please for two reasons. The subject may please, or the work may be artistic. It is, of course, easy to find a picture whose subject is pleasing, but whose workmanship is poor, just as it is easy to find a piece of artistic work with a very uninteresting subject. But since children cannot clearly distinguish between what pleases them in content and what is artistic in form, it is necessary to select from good pictures those whose subjects are pleasing.

This should, as far as possible, be done by the children themselves. Suppose, for instance, that the teacher has raised the money to buy a dozen of the medium-size Perry pictures, 6 x 10 inches in size. In sending for them, the teacher should let the children select from the catalogue, for even though the catalogue pictures are small the children can get from them a good idea of the large ones. It is very surprising, when you allow children to make selections from a group of pictures, to find that they will select to a rather remarkable degree not only pictures which are pleasing in subject, but which at the same time are on the whole the best from an artistic standpoint.

Copies of good pictures are so cheap that no school can be excused from having many of the best in albums and on the walls. It costs a little to buy good frames, but sometimes the boys can make artistic frames in the manual training class, or if not, the pictures may be placed in albums made from old geographies, or bought for the purpose. The atmosphere of the schoolroom should be pervaded with the charm which emanates from beautiful prints and pictures.

Second, when the pupil is surrounded by good pictures there is a likelihood of his unconsciously absorbing good taste in pictures, so that poor pictures come to displease. But it is necessary for the teacher in developing appreciation to point out through suggestion those pictures which are good and those which are bad. The teacher may merely affirm or say, "This is a good picture" or "That is a bad picture" and the children will accept his idea. Children get their ideals very largely, but not entirely, from the opinions of those in whom they have confidence. In the early years artistic appreciation is, to a great extent, built upon the opinions of others. *Third*, in addition, the children may be given problems to solve, which will compel

them to distinguish between the good and the bad. Such problems are easy to find. For instance, the teacher may set the children the problem of finding for a given space such a picture as will produce a quiet effect. This leads the pupils to select the quiet rather than the gaudy. They pass judgment upon all the pictures coming under their eyes and distinguish among them according to whether they are garish or quiet. At the same time the teacher may lead them to say and believe that the quiet effect is more pleasing. In the lower grades he will find that the children enjoy the flamboyant pictures, but by patient effort on the part of the teacher quieter tones can be made to displace in their judgment the more pronounced combinations of color. *Fourth*, often, too, the liking for good pictures will be enhanced if the children are taught a story about the picture. To tell imaginative stories about a picture to little children heightens their love for it. To pick out interesting details in the picture also increases interest. The little angels in a Fra Lippo Lippi picture are often the first tie to bind little children to it. *Fifth*, picture study can be correlated with language and literature study. In this correlation the content of the picture is analyzed. For instance, in studying the content of Watts's *Sir Galahad*, one composition book deals with it thus. It first shows the picture, then it tells the story of King Arthur and his Knights. It then asks for the meanings of the words in the story which bring out the meaning of the picture. For instance, *courteous*, *vow*, *solemn*, *shrine*, *fearless*, *gentle*, *high-spirited*, *charger*, *shield*, etc. Then follow a few questions asking to what the life of the knight was pledged, how he took his vow of knighthood, etc. The armor of the knight and the harness of the horse are carefully noted. Nothing is said about balance, rhythm, and harmony, as might have been done in the study of the

picture from the point of view of artistic appreciation. The lesson merely gets the children interested in Sir Galahad so that the atmosphere of this picture, which is artistically good, may be pleasing to them. *Sixth*, the discussion of a picture as a work of art deepens appreciation. Children may be asked whether they like the picture or not. If some of them do they can state the reasons for their liking. The teacher may give his opinion and when he states his reason may lead the children on to a fuller discussion of the principles of construction which were used. Children who do not like it may state their reasons, and the supporters of the picture may answer their objections if they can be answered.

It is an interesting psychological fact that if we can commit people on any subject the mere commitment makes their opinions stronger. For instance, a boy who has been indifferent to a picture may grow to like it, and by liking, notice it more attentively if he can be led to say that it is a good picture. We are surrounded in life with many things which are worth while to us but which we do not recognize as being valuable until we are asked to make some decision about their value. The farmer may not appreciate how good his farm is until given an opportunity to sell it, and the boy may not appreciate a toy until asked to give it away. So, in the appreciation of pictures, the taking of a stand in favor of it and arguing for it actually deepens loyalty to it and appreciation of its beauties.

Summary. In developing appreciation six points are worthy of mention. The teacher should select from among the many good pictures those which have subjects of interest to the children; he should use suggestion with the children; problems may be set which lead to the development of discrimination; interest in the picture is developed by the telling of stories about it; appreciation can be taught through correlation with language and literature; and discussions concerning the reason why pictures are good or bad heightens appreciation.

Alternation. Special drawing classes may begin with the fifth grade in the country school, but previous to that time much illustrative work should be required. The fifth grade may alternate with the sixth, and the seventh with the eighth, because the children have about equal abilities in each case. The course will be determined in great measure by the needs of the class from day to day.

REFERENCES FOR CLASS READING

- AYRES. *The Psychology of Drawing*. (A summary of the research work that has been done in this field.)
- FREEMAN. *The Psychology of the Common Branches*, pp. 34-66.
- *KENDALL and MIRICK. *How to Teach the Special Subjects*. (Specific suggestions with illustrative lessons.)
- KERN. *Among Country Schools*, pp. 85-102. (Schoolroom decoration.)
- LEMOS. *Applied Art*. (Beautifully illustrated and detailed suggestions for class problems.)
- *SARGENT and MILLER. *How Children Learn to Draw*. (Quite detailed suggestions about illustrative drawing for each grade.)
- WILKINSON. *Rural School Management*, pp. 113-35. (Discussion of schoolroom decoration with bibliography.)

CLASS QUESTIONS

1. Trace the parallel between language and drawing. In what respects are they alike? In what respects different?
2. Mention five cases in which you illustrated what a thing looked like because you couldn't describe it clearly.
3. Under what conditions is drawing a waste of time by primary children?
4. How do you tell whether a picture you like is a good picture or not? Is it a sure test? How do people in general decide whether a picture is good or not?
5. Is a picture that is popular a good picture necessarily? Who settles the question of a picture's quality?
6. If you were buying pictures for yourself and you had to choose between a good picture you did not like and a poor picture you did like, which would you buy? Why?
7. If you have studied drawing, name ten rules of drawing that should be observed. In what order would you teach these to an eighth-grade class?

8. When you were in the first grade, did you enjoy drawing? What things? Do you now enjoy drawing? Describe your experience in drawing as you remember it, stressing the points brought out in the chapter.
9. What methods do you now think were used by your teachers in teaching you an appreciation of pictures? If you have taught, what methods have you used? What additional methods might you use?
10. What is the best method of securing motive for drawing exercises?
11. Name five points in drawing that need to be drilled upon.
12. What pictures of all you know do you like the best? Are the pictures you like on the whole good pictures artistically? If so, have you gained this liking naturally, or have you been educated to it?
13. What attitude should one take toward the colored Sunday supplement? What is there good in it? What bad? How can you get good Sunday supplements?
14. Name five great pictures that you do not like.
15. Describe a color scheme and plan for the decorating of the classroom in which you are now working. Do you agree with the other members of the class? Whose plan is the best?
16. Take a textbook in reading and, running through ten pages of some story in it, pick out five situations that might be illustrated. Make one of the illustrations yourself.
17. What use can be made of a rural schoolhouse in teaching art appreciation? Describe what you would have the children do with some country schoolhouse which you know well enough to treat from memory.

CHAPTER VII

MUSIC

1. Subject-Matter

THE problem of teaching music in schools which do not employ supervisors of music is complicated by the fact that there are three different types of teachers. There are a number of teachers who cannot sing at all, a larger number who can sing but have no adequate technical training in music, and a third smaller group, who can sing and have had satisfactory training in singing and in teaching pupils to sing. It is further complicated by the fact that very few scientific investigations of methods of teaching music have been carried on. The methods of developing musical skill have been, to an unusual degree, left in the hands of music teachers who are inclined to accept systems of musical training rather than study the problems objectively to discover the best methods irrespective of the system. However, during the past few years the supervisors of public school music have been developing a quite important body of method, but unfortunately not as much of this has been put into print as should have been for the good of the teaching profession.

When I come to discuss methods of teaching music I am faced by this difficulty — if a teacher cannot sing or can sing but has had no training in the technique of singing, it is impossible to present in a chapter such as this a technique for teaching the details of music. I have, therefore, decided to bear in mind chiefly those people who do not have technical training in music and to suggest what might be done in such a case for the development of the love of

music in the children and some simple technical skill in rote singing.

This will make the chapter largely one dealing with the point of view, and, as such, it will be of use to those who are untrained musically and to those who have technical skill without a knowledge of the place, function, and value of music.

Music and Reading. The most illuminating standpoint from which to study methods of teaching music is that of tracing its similarity to reading, for with one or two minor exceptions it is exactly similar.

We saw in the paragraph on reading that there were five factors in the reading process. The writer has something to say and he expresses this through the medium of words. The reader has to decipher the symbols, to use the vocal mechanism of oral speech so as to convey to the audience the ideas of the writer. Exactly similar is the case in music. (1) A musical composer has some feeling to express, some idea to present to his public. Beethoven sits in the moonlight and is moved to express his feelings in the *Moonlight Sonata*. Music, like literature, is used to express some feeling, some idea, some element of value in the experience of the one who writes it. (2) It is a medium through which the writer expresses his ideas. The musical composer who wishes to express ideas and feelings in music has two media. He may use sound alone; that is, he may sing his feelings or play them upon some instrument; or he may write symbols on paper. In either case he follows some very definite rules of musical composition, rules which are just as definite as those of English composition. If he decides to write his music he has to use a musical "alphabet" consisting of notes, staves, and clefs. These notes are arranged in groups and the groups are arranged in a way to express ideas, much as sentences do.

These symbols in music are more difficult to master than are the verbal symbols. This is so because music adds pitch to the verbal element. In the verbal alphabet "b" is "b" wherever it is seen and "c" is quite different in sound from it. "Do" as a spoken word sounds quite different from "re," but as music it not only sounds different as a word — there is also a difference in pitch. "Do" not only sounds different from "re" as a word, but it is an interval in pitch lower than "re" in music. Then, too, the written notes do not always mean the same thing. In this case  one learns that the notation stands for a certain tone called "b natural," but by a slight change, thus —  it is no longer "b natural" but "b flat" and is a half-tone lower. The task of mastering the symbols of music is therefore rather complicated. This is particularly true of those people who do not possess a fine sense for tone. They may know "do" from "re" as spoken but may not be able to place "do" at one pitch and separate it from "re" with one interval between. Such people are called "monotones." The number of these who can never distinguish one tone from another in pitch is very small. Most so-called monotones fail to distinguish the pitch of notes simply because of lack of training.

The third factor, after the composer has expressed his ideas, is the deciphering of these symbols. The musical "reader" must be able to read the symbols, interpret their meaning, and relive the experience of the writer so that he may think his thoughts, and feel his feelings after him. In reading music the fourth factor is the control of the vocal mechanism composed of such organs as the tongue, palate, teeth, lips, vocal cords, lungs, and diaphragm. In singing (and it is of this alone that I shall speak) the same organs are used in a slightly different way from that

used in reading, inasmuch as pitch enters into musical expression. Finally, there is an audience which the reader hopes to bring into accord with his feelings and those of the writer. The singer tries to make his audience feel what he feels and what the composer felt as the singer understands it.

Summary. There are three things to observe in teaching singing. These are: (1) a set of symbols to be mastered, (2) a vocal mechanism to be brought under control, and (3) a musical reader or interpreter who will try to get at the meaning of the composer and will then interpret it to an audience. The same factors hold in the handling of instrumental music.

The Function of Music. There is one noticeable distinction between the function of music and the function of spelling, or handwriting, or reading. These are not of any particular use in themselves; they are tools to be used in doing something that we want to do. In spelling and handwriting the important element is the idea that we want to express, and these subjects are of signal importance to the ideas. Music, on the other hand, does not take a place secondary to any other subject. We do not learn music because we want to be better citizens or earn a living. We study music for its own sake. We sing because of the enjoyment gotten out of singing. We listen to music because we like to listen to it. In short, when we come to consider music we see a subject which is one of the fundamental subjects of experience. We have no reason for enjoying music outside of itself and enjoyment of music is sufficient reason for the study of it. In this respect it is exactly like literature. We read literature for one chief reason, and that is to enjoy reading literature. This enjoyment in both music and literature is partly intellectual, partly emotional, and partly æsthetic, for just as we express ideas in æsthetic form in an emotional atmosphere, the composer of music expresses ideas, though less definite

ideas, in aesthetic form with an emotional atmosphere. The participator in music gets his full reward from the enjoyment that he gets out of the ideas, feelings, and beauty which the composer felt and tried to express.

Summary. The function of music is to provide the enjoyment that comes from the expression of ideas and feelings in tones which obey the laws of beauty.

Ideals. There are three ideals that are particularly important in the study of music in the schools. The first of these is *appreciation of the beautiful* in music. It is not sufficient for children to be able to sing or to read notes, for it is possible to be able to do both of these and still possess a marked lack of appreciation of music. Moreover, it is possible for a person to possess a very keen appreciation of music without being able to sing or play with any technical perfection. Where there is one person who is a good technical performer, there are a thousand who belong to his audience. A nation may be filled with a love of music and have only a handful of superior artists. Yet where a nation is filled with lovers of music there will be thousands and tens of thousands of people who can sing and play a little and who get their musical enjoyment chiefly from listening and partly from amateur participation. It will thus be seen that even where a school does not turn out professional singers and instrumentalists it is possible under intelligent leadership to develop that appreciation of music which is even more important socially and nationally than technical skill in music.

The second ideal is that of *accuracy* in the reading of music and in voice control in singing. If the teacher is trained in music and seeks to teach the children to read music, he must realize the importance of accuracy, at least in tone production. It is much worse for a child to misplace a tone than to mispronounce or misspell a word.

Closely connected with the ideal of accuracy is the ideal of *speed*. For, if the child is actually to use the reading of notes as a means of learning a tune, he must be able to read with speed as well as with appreciation. If he does not have this speed of reading, the problem of acquiring the tune through reading by himself is so discouraging that he does not try to do it. Unless pupils can read music almost as speedily as they can read words, or at least speedily enough so that they will not grow discouraged, there is not a great deal of use in trying to teach them to read at all. The parallel with the reading of words is close. We saw, in silent reading, that if the pupil did not have speed in reading, he would never read when he left school, but would depend for his ideas upon conversation with other people who, possibly, could read. So, if the child is unable to read music with speed, he will sing entirely by rote as he catches the tune from other people.

The Teacher's Objectives. The teacher has two objectives in teaching music. The first of these is the development of the appreciation and love for music. If children study music for eight years and do not enjoy it, or if they positively dislike it, there has unquestionably been a complete waste of the time that has been spent upon the subject in school. It would have been better if the subject had been struck out of the course of study. The methods of developing this appreciation will be discussed at the proper place in the chapter. The second objective of the teacher who is trained in the teaching of music is developing skill in singing and this skill is composed of two factors which we have mentioned — accuracy in reading and voice manipulation, and speed in deciphering the symbols of music.

Standards. In brief, the standard by which to judge of the excellence of school music is exemplified in a roomful of children, who love to sing beautiful songs, are able to sing

them with good expression and by note, and enjoy listening to good music. A class that enjoys listening to good music is scored high, a more efficient class is one that not only enjoys listening to music but sings by rote, loves its songs and sings them with expression. A class that can do these things and sing by note is rated still higher. A class that sings by note, but does not seem to enjoy it and does not give good expression to the songs, is not graded so high as one that sings sweetly and with good expression.

Course of Study. The course of study in music consists of three elements. The first of these is an appreciation of music which increases through all the grades. It is particularly and chiefly an attitude toward music that is built up by the teacher in connection with every beautiful song. It is in part secured by lessons which are called "appreciation lessons," but such lessons cannot take the place of an appreciative attitude toward every song that is sung. Indeed, appreciation lessons are frequently found to be very formal. The second element in the course of study is what is known as rote singing. This is carried on throughout the grades, and is used exclusively at first, just as conversation is used before the study of language and grammar begins, and just as in the case of language it is carried on throughout the grades. The third element of the course of study is note singing in which the children learn to decipher symbols and express them adequately. This naturally divides itself into the reading of notes and the control of the voice.

The teacher who is not technically trained in music can work in the first two of these fields if he has a love for music himself and can express, however inadequately, his own appreciation, and lead the children to express and discuss their appreciation of the songs. He can also, if he cannot sing himself, select a good singer from the older

children to lead the singing. Indeed, when there is no such person in the school, arrangements have been made by rural school teachers for the voluntary help of some person in the community who is very much interested in singing. Lack of technical training in music is no excuse for the teacher's failure to get the children to love good music. He is handicapped, to be sure, but at least if he cannot be the teacher of music he can be the administrator who gets some one to teach it for him.

There are a number of points that a teacher with no technical knowledge of music can watch. It is possible for him to tell whether children sing harshly or sweetly, whether they sing too loudly or with muffled voices; he can also tell whether they sing lifelessly or with enjoyment. Upon such points as these he can influence the rote singing of the children even where the instruction is poor, as when carried on by an older pupil. Such a teacher, obviously, cannot teach note singing. Yet the loss is not so great as it would be if the teacher made no attempt to develop a love for music. Good rote singing is immeasurably better than no singing at all.

The details of the organization of the course of study are described in the references at the end of the chapter. There is no more unanimity concerning the content of the course of study in music than there is in literature. It has to be constructed according to principles rather than upon detailed studies. The same principles hold as in literature. The music studied should be interesting to the children at the ages when they study it. It should not be too difficult for them to comprehend and master. Moreover, it should be good music. The problem of the teacher becomes that of selecting from the best music that which is interesting and reasonably easy. Good music can be drawn from several sources. At once we think of classical music, and

in it there are many very beautiful compositions which children may enjoy much more than ragtime or jazz. There are the folk songs which have stood the test of the ages, by people who, while not technically proficient in music, love it deeply. In addition there are modern songs and popular songs which obey the rules of musical composition and good taste, just as there is a modern literature which is just as worthy of being read as is the literature written by men who have long been dead. There is no objection to popular music as such. It comes and goes. Some of it gives temporary enjoyment and some of it lives for years. The teacher, therefore, has a wide field from which to select, according to the principles of interest, degree of difficulty, and beauty.

The music books adopted for the school naturally contain many good selections, but these should be studied by the teacher to see that the songs taught in a particular grade are interesting to the grade, that difficult selections should follow less difficult, and particularly that supplementary material be introduced from other sources. He can at least have two or three sets of music books by different authors because these cost very little and can be used as a basis for note as well as rote singing. In general, of course, the inexperienced teacher will depend largely upon the textbook in music. Upon the whole, the wisdom and experience of the writer is greater than that of the inexperienced teacher, but as time goes on, the teacher is able, through concrete experience, to form his opinions as to interest and difficulty.

Testing. Within recent years very rapid strides have been made in testing the ability of pupils in music. This has been accomplished almost exclusively through the work of Professor Seashore of the University of Iowa. It is possible, by the use of test material arranged for use on

phonograph disks, to test a pupil's sense of pitch, intensity, time, extensity, rhythm, timbre, consonance, volume, and so on. This is of very great use to parents who are in doubt about whether to give their children a musical education or not, and is of value to teachers in diagnosing the difficulties of children in mastering the technique of music.

The tests can be purchased through the Columbia Graphophone Company. Obviously, they will be of use only to teachers who are technically trained in music, but for such they are of very great value when used from the fifth grade on. I recall one case in which there were two daughters and a son in a family. The daughters were being given an intensive musical education while the boy was not receiving any instruction; yet the test revealed the fact that the boy's musical ability was quite superior while that of the girls was so inferior that the excessive time they spent upon music was largely wasted. For the sake of those trained teachers who are interested in testing, it may be mentioned that Professor Seashore has described his tests and the underlying theory in his book, *The Psychology of Musical Talent*, published by Silver, Burdett & Company.

2. Interest

Here again the parallel between reading and music will furnish us with our method. The first essential in getting a motive for oral or silent reading is to have material that is of value. Likewise, the first essential in getting interest in music is to have songs that are interesting to children. Music teachers frequently do not present songs as virile as they should be for boys, or as grown-up as the case demands. Very often the songs are obviously manufactured for use as class exercises and may be neither very good nor very interesting.

Interest in music is immediate. The children like it for its own sake and all children like to sing up to the time when their deficiencies become apparent. The real problem of the teacher is to maintain throughout the grades in the face of the difficulties of changing voices and self-consciousness the interest which is present in the primary grades.

It is held by some teachers that interest in rote singing wanes unless technical instruction is given, but obviously this cannot be natural because most people pick up their music by rote. The cause is to be sought elsewhere, and is due to the fact that the songs which the children learn by rote are not sufficiently interesting nor sufficiently varied. The decrease of interest may be due to the singing of a narrow range of songs so often that they become too familiar and trite.

Upon this immediate interest in music is built the interest in singing by note. Just as one learns to read best when he has an interesting content to decipher for himself, so the pupils learn to read music best when the content upon which they work is interesting. If the reward secured by the labor put upon reading notes is something that is very beautiful and new to them, or even beautiful and familiar, the speed at which they learn to read by note is greatly increased. The teacher can never wisely forget for a moment the fact that his main business in this subject is to keep the children interested.

The audience idea can be used to stimulate interest. If children are allowed individually or in groups to learn good songs at home and bring them to school to sing to the other boys and girls who do not know the songs much interest is aroused. Or if they can learn to sing songs at school and sing them to an interested audience at home, interest is stimulated.

Summary. Interest in music is immediate; little children love to sing by rote and note singing is built upon this interest. The giving of pleasure to other people through singing heightens this interest, which is naturally felt.

The Social Phase of Music. While it is true that music is primarily studied for its own sake, it is nevertheless equally true that it has a very definite influence upon people who live in groups. We have long known and repeated the epigram, "Let me make the songs of a nation and I care not who shall make its laws," but we have been slow to realize the full significance of this statement.

The social value of music is brought out very aptly by Surette, who says:

Now, the possibilities in music to weld together socially disorganized communities have never been fully realized in America. Were we to set about using it directly to that end we should find out how valuable it is in breaking down artificial barriers. By choral singing, people in any one locality can be brought into a certain sympathy with each other. Groups who attend the same church, the fathers and mothers of children whom the settlements reach — wherever there is a "neighborhood" there is a chance for singing. It needs only a person who believes in it and who will rigidly select only the best music. Any great gathering of people would find everybody ready to take part in choral singing. This would make community music a reality, and would doubtless so foster the love of the art as eventually to affect the whole musical situation. Any one who has ever had personal experience of bringing fine music to those who cannot afford to attend concerts knows that such people are as keen for the best as are those who can afford it.

Community leaders with a vision of the school as a social center place very great reliance upon music. Particularly in small communities musical and literary programs are given periodically by the school because parents are willing to come to hear their children when they would come for no other reason. Somewhat more difficult, but frequently more enjoyable, are musical plays that are staged by the teacher or some other musical leader in the

community and are rendered by the children and interested adults. The phonograph, owned or borrowed by the school, with records carefully selected as to both excellence and interest, often used alone and sometimes in combination with other numbers, is a convenient aid to an enjoyable evening's entertainment well advertised in advance by the pupils. An evening of community singing, with or without the addition of readings or phonograph records, has, on innumerable occasions, drawn a crowded house, for while adults enjoy listening to music they are still more interested in singing familiar and beloved songs under the inspiration of a good leader. New songs, the latest and the best, are quickly learned and the school which gets a reputation for being a place where one can learn the latest musical hits will not be lacking in attendance at its evening assemblies. Then, too, the school can easily advance from these home affairs to the importation of talent upon occasion. But always the foundation of the musical and social center is the active participation of the people of the community in their own musical enterprises.

Music is of use not only to the community. It is indispensable to the school. A few minutes spent in song or in listening to enjoyable music, brightens the atmosphere, raises the tone of activity, cheers the discouraged, and quiets the unruly. Merely as an aid to discipline it is invaluable and as an adjunct to physical exercises it is not to be neglected. On the march, the lagging steps of tired soldiers quicken to the strains of martial music. In the factory the product of labor is increased, and on the shipping platform the strain of effort is lessened by rhythmic chants and melodies. The bickerings of individuals disappear under the influence of gentle music and the disappointed are raised to heights of optimism. Nowhere is there a more powerful stimulus to social cohesion and unity

than participation in familiar songs and attention to the rendition of beloved numbers.

The effort to develop a love for music with its attendant values lays emphasis upon rote singing, for, as has been said, many people enjoy music who have no ability to read it. Children can be "told" songs just as they are told stories. Not to be able to read words is a calamity because there is so much to learn that can be found only in print, so inability to read musical literature narrows the musical experience of children. Naturally, since the number of musical compositions is much smaller than the amount of verbal literature, it is less necessary to be able to read music than to read words. It is desirable that children be able to read the notes but it is essential that they learn many good songs by rote.

Summary. The essential aim of the teaching of music is development of the appreciation of music as literature. Possession of a love of music is of both individual and social value, and the private possession of a large body of songs and an acquaintance with a wide variety of musical compositions are essential to fullest appreciation.

Projects. The project method is at home in music, for here we find the natural setting brought into the schoolroom. As we have said before, a project is an activity carried on in its natural setting, when by natural setting we mean a setting which is not different from what it would be outside of school because it is handled in school.

The answer to the question, "What is the natural setting for music?" is that we have music in its natural setting when we listen to it, play it, or sing it for the enjoyment that we get out of it. Clearly then, the pupil who reads music for enjoyment is carrying on a little musical project, or when he sings for an audience because he likes to and the audience wants to hear him, he is again carrying on a

project. The characteristic of the natural setting in music is doing a thing because of the pleasure in it.

This at once enables us to classify a number of musical activities as projects. The simplest project is one in which the child sings, plays, or reads music for his own enjoyment, but in addition to that we have such musical projects as community gatherings for which the children may prepare. To these are added entertainments for children in other rooms, for parents, or on Friday afternoons for themselves. Likewise there are out-of-door and indoor concerts to be given. Under more expert direction pageants may be staged and contests put on between schools. All of these are projects and have a definite place and great value in developing a love for music and the pleasure that comes from giving pleasure to others.

3. Methods of Teaching

Appreciation. No thoroughgoing technique for the development of appreciation in music has been worked out as yet, but there are a number of suggestions developed by teachers of music which have been found to be valuable in developing a love of music. *In the first place*, mere exposure to pleasing music tends to develop a love for it without any training in appreciation. If children are brought into contact with good music through singing or through the phonograph they may unconsciously become attached to it and even learn to recognize the difference between the satisfaction that they get out of jazz and the deeper satisfaction that comes from good music. Because of the fact that mere exposure may develop love for good music, any teacher, whether trained in music or not, should see to it that by voluntary subscription or by purchase by the school board the schoolroom is equipped with a phonograph and interesting records. These records must be

selected with extreme care, for many of them have been made for adults and not all of them are of interest to children. Moreover, they should be selected for the primary children as well as for the older children. Some teachers go so far as to order a number of good records from the nearest dealer and allow the children to vote on those they like the best, with a view to returning those that are less well liked. No single factor will have so great an influence upon developing a musical America as the phonograph, and the school has a duty of unmistakable clearness in seeing that it is used to its full advantage.

In the second place, it is pointed out by the experts in music in the public schools that the teacher's own appreciation and ability to influence the pupils in their appreciation, plays a very important part in developing the proper attitude. The teacher's preferences show through his voice, his manner, and his remarks, and these preferences and judgments the children quickly absorb. Perhaps the teacher's appreciation may be misplaced but probably it will not be. In any case, all that he needs to do is to be sincere in his expressions. He has a perfect right to influence the children in music in the same way that he influences them in morals or mathematics. Nor should he lack confidence in expressing these preferences, because all that he needs to be saved is to be fifty-one per cent right. He can trust the children as they grow older to form their own true opinions and natural attitudes.

In the third place, teachers quite commonly discuss what the children like about the selections. The teacher leads them to recall the part of the air that was particularly pleasing or to call for its rendition again on the phonograph, while pointing out again the particular part which he prefers. The teacher may also render the phrasing in slightly different ways to show the children the difference

that the rendition makes. In other words, appreciation can be developed by using one's reasoning in the study of music, and indeed it is held by expert critics that musical appreciation of the highest type is both emotional and intellectual. Music which appeals only to the feelings is called emotional. The best music appeals to both the head and the heart, and since this is the case, teachers are justified in having the children discuss music, reason about it, and even at times argue over it.

In the fourth place, appreciation for music is developed by the securing of information about the author, the conditions under which the music was written, etc. Although this is carried too far by many teachers who think that appreciation consists merely in securing this information, it has a very valuable place. There are a number of great composers whose names should be as familiar as those of statesmen, warriors, and authors. They have contributed as much as these to the life of the nation and their names should be recognized and honored.

Fifth, and finally, one of the most important ways of developing appreciation is through mass singing, either in the schoolroom or in choruses or in community gatherings. Often this mass singing hurts the ear of the expert because some of the children sing markedly out of tune, but practical teachers who believe in community singing obviate this in part by having the children sing quietly rather than loudly, and by paying particular attention to the discordant to see that they materially lower their voices. Yet it must not be forgotten that the boy who sings discordantly may be developing just as rapidly and deeply a love for music as his prim and precise older sister who carries the tune without a fault. It is not necessary for the individual to be able to sing accurately in order to like to sing. In moments of exasperation we sometimes wish that those

who sing discordantly realized their difficulties and refrained from singing, but since we are not concerned about our own feelings so much as a love for music in the individual, this should not be a matter for deep concern.

Summary. There are at least five ways in which an appreciation of music can be developed. Children may be exposed to music, the teacher may influence them by his own love and appreciation of individual selections, discussions may be held and preferences stated with the reasons for them, narrative facts concerning the composer and the selections may be taught, and participation in mass singing may be carried on.

Suggestions. In concluding the chapter, which professedly does not attempt to teach the technique of music teaching but lays emphasis upon the contribution that can be made by the untrained teacher to the development of a love of music, a few technical suggestions drawn from Earhart's surveys mentioned at the end of the chapter may be presented. (1) He is definitely of the opinion that monotones should not be segregated in the class. It makes them conspicuous and ill at ease. They should be given individual attention, inconspicuously, by the teacher at their seats. They should participate in all singing by their class, but they should be taught to sing softly and with a low voice. (2) Supplementary books of music containing many good songs of easy grade, technically, should be purchased for supplementary use and this song material should be treated as sight-singing material, with such complementary instruction as may be necessary. (3) Pupils who play the piano should be sought out and requested to play accompaniments, marches, etc., whenever such service would contribute to the enjoyment of the pupils. Pupils who are studying musical instruments should be requested to play occasionally for the class and every effort should be made to encourage in the school large and prominent organizations of players, of the nature of school or community

orchestras. (4) Teachers should understand the voices of the boys in the seventh and eighth grades and should help them to transfer quickly to the lower octaves and teach them that they do not need to cease singing while the change is taking place and that it will not harm their voices to continue singing while their voices are changing provided they do not overexert them. (5) Stereotyped definitions that give no indication of musical power and afford only a memory test should be discarded and theoretical knowledge of the music being sung should be limited to the musical capacity of the pupils. (6) Earhart is of the opinion that music appreciation study should not be undertaken as a separate type of lesson until at least the eighth grade has been reached. Appreciation should be an informal element in connection with every musical selection rather than be confined to separate periods.

Alternation. It is suggested that all children sing together; and that when a book is used, each fourth exercise be studied each year. The first, fifth, ninth, etc., the first year, and the second, sixth, tenth, etc., the second year. This will take the whole class through the book once in four years. And since there is much to learn in the way of technique and but a short time in which to learn it, the repetition for the second four years will probably not be felt to any great extent.

REFERENCES FOR CLASS READING

- EARHART. The chapter on "Music" in *A Survey of the Schools of Wilmington, Delaware*, Bureau of Education Bulletin No. 21, 1922.
- EARHART. The chapter on "Music" in *A Survey of the Schools of Memphis, Tennessee*, Bureau of Education Bulletin No. 50, 1919. (These two bulletins present specific suggestions based upon the observation of points of excellence and deficiency in these two school systems.)
- FARNSWORTH. *Education Through Music*. (Work arranged by grades.)
- *GIDDINGS. *Grade School Music Teaching*. (Presents a great deal of suggestive and detailed material on methods of teaching.)

*KENDALL and MIRICK. *How to Teach the Special Subjects*, pp. 36-99.
(Detailed suggestions for teaching music.)

CLASS QUESTIONS

1. How many different sounds does the dictionary give the vowel *a* in speech?
2. How many different sounds are given to the note *do* in singing?
3. Have you ever seen the piano player used in schools? The phonograph? Describe the plan and results.
4. If you found that the pupils who loved singing sang loudly but could not keep the tune, what would you do?
5. Do you in church enjoy the congregational singing more than you do the sermon? Do any of your friends?
6. Take three sets of music books and compare the order of subjects in their courses of study.
7. Have some one among your friends, who is able to do so, write out some songs after hearing them sung.
8. How would you secure rapid reading? Compare your answer with the same question as to verbal reading.
9. What are five of your favorite songs?
10. Describe plans other than those mentioned in the text for using an interested audience to secure interested singing.
11. Is an orchestra practicable in the country school that you teach? Why?
12. Describe the plans by which a musical festival was carried on in any country community where you have seen one.
13. Mention ten cases of good correlation of music with poems studied as great poems, not merely words for music.
14. Correlate music with agriculture. Did you ever notice the large number of poems of which agriculture is the subject? It is striking. Name a dozen such poems.

CHAPTER VIII

THE INDUSTRIAL ARTS

1. Subject-Matter

Introduction. By the term "industrial arts" is meant those arts which change raw materials into useful products. It refers to the arts which take cotton, wheat, iron, and lumber, and work them up into clothing, food, furniture, and utensils. These arts have had a tremendous influence upon the course of civilization and taken in their broadest applications are the foundations of the material equipment of life. Without their skillful application we would to-day be in the position of the lowest races of savages.

The industrial arts are of great significance to education for two reasons. In the first place, they are of such great social significance that the students should study them for the same reason that they study history. No person can claim to be completely educated unless he has a considerable knowledge of them. In the second place, they easily become excellent teaching material in which the problem method of study is constantly used. For instance, if we take such an art as boat-building, we are able to set the problem of transportation on water before the children in very simple form in primitive conditions, and lead the children to invent a hollow log as a method of transportation, and then proceed step by step from that point through the use of oars and sails to the steam turbine with wood, coal, and crude oil.

However, at the present time there is one very serious limitation to the teaching of the industrial arts. Teachers

do not know a very great deal about them. In general they do not have even a factual knowledge of the industrial arts and know even less about their evolution. This is due to the fact that the importance of the industrial arts as a factor in social life has not been recognized until recently and consequently the teacher has arrived at a point where he is expected to teach this subject without having gained adequate information either in the elementary school or the high school. Moreover, there are very few textbooks that have as yet appeared which are definitely available for use in the grades. Yet the literature is in itself very interesting and in some elementary schools, schools for the training of teachers, a considerable body of material has been collected and is available for teachers who are interested in broadening their knowledge of this field. Particularly valuable is the recent book by Bonser and Mossman referred to at the end of the chapter, and from it I shall draw a considerable amount of material.

Summary. A knowledge of the industrial arts and the methods used in the field is of great importance to students, but the subject has been so recently introduced into the schools that the average teacher must depend to a large extent upon his own initiative in working up the material in the field.

Divisions of the Field. Following Bonser and Mossman the field may be broken up into six divisions. It is customary to speak of food, clothing, and shelter, as the three fundamental needs with which the industrial arts concern themselves, but to these are added three others. They do not constitute all possible fields, but together represent six important fields. (1) In the field of foods we are concerned with the study of the art of food preparation by which all the raw materials, such as cereals, fruit, vegetables, meats, etc., are prepared for human consumption. In this process there is the preparation of foods, their selection upon the

basis of cost and nutritive value, the proper balance of the diet, and the preservation of foods. (2) Under clothing are considered the arts of spinning, weaving, clothing selection and construction, by which cotton, wool, silk, and other raw products are changed into the materials which can be used for protecting and adorning the body. (3) Under shelter are considered the processes of manufacturing, lumbering, iron, copper and glass production, and the conversion of raw materials into finished products which provide shelter against the elements. (4) Utensils of the home, such as dishes, have played such an important part in the history of civilization that the knowledge of their evolution is of value. (5) In addition to utensils we have the tools and implements of the vocations, which have an interesting history. And finally (6) Bonser and Mossman include in this series of important topics the method of keeping records, in the form of books manufactured from paper.

The public school teacher who wishes to teach a course in the industrial arts should clearly include the first three of these fields in the study and may include others, depending upon the amount of time and the information which he is able to secure.

Ideals. In the teaching of the industrial arts there are at least five ideals to which attention needs to be paid. (1) Children should be led to appreciate the beauty of manufactured materials and to seek for beauty in their own products. (2) The ideal of economy of effort, time, and money needs to be developed at the proper place since they will be essentially purchasers of all of these materials but producers of only one, the one in which the vocation of each lies. The factors involved in good buying need to be highly stressed. (3) Good judgment concerning the expenditure of money for these products needs to be developed as a by-product of the effort to secure economy. (4) Some

considerable skill in technique should be developed in the upper grades while in the lower grades skill is not sought for as much as an understanding of the processes. In the seventh and eighth grades the students can hope to become somewhat skillful in the preparation of clothing and food and in the use of tools in the manual arts. In these grades the children should set reasonable skill as an ideal. They should be taught not merely to do the things, but to do them as perfectly as can reasonably be expected. (5) Scholarliness or the desire for a wide knowledge of the industrial arts has an important place because of the value of the arts to civilization. That is to say, the children should be expected not only to have skill in production in some of the arts, but they should have an interest in learning and remembering facts about raw materials and the methods used in their manufacture into the finished products.

The Teacher's Objectives. The teacher who teaches the industrial arts has at least five objectives to keep clearly in mind in the teaching of the subject. (1) Fundamentally it is important to give the children some conception of the place of industry in civilization. (2) Since most of the money of men and women is spent in the purchase of the products of the industrial arts — i.e., for food, for clothing, and for shelter — it is important that children should be trained to be thoughtful purchasers and users of these products. What foods to buy, what clothing to purchase, how to prepare foods, construct clothing, and purchase and maintain homes, is of the greatest social and economic importance. (3) In order to become thoughtful purchasers children need to be reasonably well informed about raw materials and the processes of manufacture. (4) Some skill in the arts should be developed, not so much for the purpose of teaching them how to prepare foods and make

clothing, although that is important, but to give the pupils an appreciation of how the processes are carried on. This appreciation can be best given, of course, by teaching them to perform some of the simpler operations themselves. (5) It is highly essential that in all this teaching the problem method should be used. It is not sufficient for the children to be given facts about the industrial arts; little problems should be set for them which they should be given an opportunity to solve for themselves. It is because of this that the primitive life is of such great importance in the curriculum. The children are easily able to construct such materials and use such processes as primitive man was able to develop.

The Course of Study. The course of study which is developed in the industrial arts is dependent upon two factors. The time element is of importance. Obviously in the rural school the subject cannot be taught as intensively as in the large city system. But of greater influence is the knowledge of the teacher. Quite clearly the teacher who himself possesses little knowledge of the subject has to depend largely upon his textbook. If this is meager in content he cannot hope to go far beyond it, except as he can pick up information for himself. However, in any case, the teacher must plan the course that he is going to follow and carry the plan out through the eight years of the elementary school.

Activities. There are four different activities which need to be borne in mind in the teaching of the industrial arts. (1) The student is to use industrial products. (2) He prepares and constructs some of them, such as food, clothing, and, in the rural communities, many of the tools and buildings which are used on the farm. (3) He must buy and select the products. For instance, he buys and selects raw materials for food and clothing or selects the prepared

foods and ready-to-wear clothing. (4) He must also maintain and repair these if he is to live economically and efficiently. This is particularly true of clothing, utensils, tools, and implements. These four activities have to be borne in mind in the teaching of the industrial arts.

The industrial arts are particularly well suited to children because they involve certain natural impulses of the children, the expression of which is of very great interest to them. Of these there are four. The children in the first place have an impulse to manipulative activity which leads them to love to make things. They have a wide curiosity which leads them to investigate. They have considerable interest in beauty of form and color and they love to observe what others are doing and to share with them in their activities as well as to secure approval and help from other people.

However, in doing this their skill and ability develops. Therefore, in grading the work we need to take these differences in skill into account. On the physical side little children do not have control of the finer muscles, they have little strength and consequently they have to be given simple and crude things to make, and should not be held to a high degree of skill. Later in the course they tend to get better control of the finer muscles and a higher degree of skill can be required, while at the same time more complicated and finer work can be given them to do. On the mental side the smaller children are interested in working with simple material. They cannot carry out projects to any great extent nor are they able to plan so well as they can later. Moreover their interest in the practical activities of the community is not so well developed. Ability in manual lines grows as time goes on and work involving increasingly difficult manual operations can be introduced into the grades. Because of this physical and

mental growth the grading of the material must be watched carefully so that the younger children are not given work that is too difficult and uninteresting because of its difficulty.

In the grading of material the objects worked out by Bonser and Mossman for each grade will be found by the teacher to be of great value in determining what the course of study should include in each grade.

Food. (1) In the study of foods we must, as we have said, teach the children before they leave the eighth grade something about the use of foods. This means particularly that they should be given information about the balanced diet and be taught the general principles of nutrition. Particularly should they have concrete knowledge about the balance of carbohydrates, proteins, vitamines, etc., so that the family menu may not consist exclusively of starches or proteins. This having been taught it is very important that they should learn something of the calory, particularly in communities where adults do not perform a great deal of manual labor. In teaching the facts about calories children should be given information about the number of calories necessary for the efficient maintenance of life, so that there will be no danger of undereating or overeating and this information should be so given that the student will know approximately how many calories there are in a usual serving in the home, of butter, bread, meat, portions of pie and cake, etc. (2) Before girls have left the eighth grade they should have knowledge, given in the home or at school, concerning the preparation and purchase of the common foods. They should know whether it is cheaper to buy or preserve certain foods such as can be purchased in cans, and whether, if it is cheaper, it pays in terms of time and effort. But frequently in the cities, where the price of raw foods is high, it is clear that canned foods can

be bought more cheaply than they can be preserved by the housewife. On the farm, however, the opposite is probably the case, but the girls should figure this out for themselves in terms of actual prices obtaining in the community. (3) They should be taught also the principles of selection, as was referred to just above. The average adult house-keeper does not have a wide enough variety of foods. She is inclined to get into a rut and make the things that the family seems to like or what she prefers to prepare, without regard to the proper balance. One of the most important functions, perhaps the most important function of the foods course, is to teach wisdom in the selection of foods to be prepared and eaten. (4) How much skill in the art of preparing foods should be taught in schools is not an easy question to decide. In some communities the girls are well taught at home, and in such cases attention can best be given to the selection of foods. In other communities the girls are not taught to cook and prepare menus at home, with the result that the school has to pay considerable attention to this subject if efficiency is to be secured. In a sense, the objective of the school is determined by the degree of instruction that is given at home.

In proceeding through the grades, following Bonser and Mossman, we find that children in the first grade can be taught how foods are put away in the fall. They can be given information about the canning of the common foods. They can even make some of the jellies, cakes, and soups and can learn to wash the school dishes. Some attention can also be paid to the sources from which foods come. This can be done by visits to the grocery stores, by cut-out pictures from food advertisements, etc. In the second grade it is possible to continue this work and to make a study of how primitive peoples get their foods. In the third grade the study of milk seems to be satisfactory.

This includes not only a study of the constituent parts of milk but the making of junket, cottage cheese, butter, etc. In primitive life work the study of the food of the Indians is very interesting. In the fourth grade these authors have children study such things as the making of raisins, dates, figs. They study nuts, macaroni, eggs, some starches, and vegetables. In the fifth grade comes the preparation of breads through the use of yeast, etc., as well as some information concerning the meats. In the sixth grade the planning of meals is made the central topic. In the seventh and eighth grades this work may continue, with stress laid upon the preparation and selection of foods.

It is quite apparent from the foregoing statement that the selection of what is to be taught is not completely settled. Other items might just as well be taken up if we are careful to bear three things in mind: (1) The materials studied should be those which are actually found in community life. (2) The children will eventually have to prepare and select foods. (3) The teacher should work upon those things upon which he has the most information.

Summary. In the study of foods it should always be borne in mind that the children must eventually prepare foods and information should be given to this end about the balancing of diets, calories, costs, and selection of food. The amount of skill to be taught is dependent upon what is taught in the home and material for each grade should be selected upon the basis of community needs and the knowledge of the teacher.

Clothing. In clothing the most important thing to teach is discrimination concerning the relative value of the factors to be sought for in the purchase and selection of clothing. We find that in the selection of clothing there are six important factors which need to be borne in mind. The first of these is the appearance of clothing. This involves the texture of the clothing, its quality, its color, and its ornamentation. The second value sought for is style.

Other things being equal it is better to purchase clothing which is in good style rather than clothing which is out of style. It is therefore apparent that the study of styles in the upper grades is a natural part of the curriculum on clothing. A third pair of factors is that of serviceability and durability. If the choice is to be made between durable clothing and clothing which wears out, it is better usually to purchase the durable clothing even if the price is higher; serviceability is concerned with the uses to which it can be put, whether it can be easily repaired, cleaned, etc. The fourth factor is becomingness, and a fifth factor is comfort. Specifically, in the selection of shoes, some people lay more stress upon comfort, while others consider style to be superior to comfort. Finally, in the selection of clothing sentiment often plays an important part. People are sometimes willing to pay more money for hand-made clothes than for machine-made goods which are equal in value.

All of these factors the purchaser of clothing needs to take into account, and it is a function of the school to help children to be wise selectors of clothing, through a knowledge of materials so definite that as purchasers they will be able to make a wise selection.

Construction of Clothing. How much the students should be taught concerning the construction of clothing is again dependent upon what they are taught at home. It has, however, been demonstrated that by the time girls have finished the eighth grade they are able to attain to considerable skill in the making of hats and some of the simpler garments. There is no reason why all girls should have to depend upon milliners for their hats. Many girls have much better taste than the average milliner and all that they need to make their own hats is to know a few tricks in hat-making. If the girl knows these she is able to have

four hats a year where now, because of expense, she may have only one.

The teacher must be careful not to give the girls merely some trifling sewing exercises, but tasks about which they are actually thinking outside of school. To practice overcasting, buttonhole-making and all the other processes in class and pay no attention to making hats, dresses, etc., is a waste of interest, if not a distinct waste of time.

Three points are of importance. The first is that there should be much home work in the sewing classes; in fact the work in school should be in large part a stimulus to the sewing work at home. In many country districts great interest has been aroused in sewing, even when not taught as a part of the regular work; occasionally some time is taken for sewing outside of school, and occasionally no time is given to it by the teacher except in getting up contests. The second point is that the boys and girls should be made acquainted with the great sewing industries which employ hundreds and thousands of men and women, boys and girls. Not only should they be introduced to the process of sewing or weaving by machines so that they can understand how a great plant is organized, but they should be taught about the social conditions and the wages of these workers. The teacher's obligation has not ceased when she has taught a girl how to make a buttonhole. The third point is that boys should learn the elements of sewing sufficiently to cover balls, make marble or nut bags, sew on buttons, and darn ordinary rents.

There is no reason why a male teacher should not be able to teach sewing to girls. Hundreds of men make their livelihood by sewing, but in case the male teacher has not learned or is unwilling to learn to teach sewing it is his duty as part of his job to see that clothing construction and selection is taught by some one who is able to do it properly.

Some male teachers derive a good deal of fun from teaching the simple sewing in the lower grades and use an experienced helper in the upper grades.

Maintenance and Repair. Quite important in clothing is the teaching of darning, mending, cleaning, and the care of clothing. Some teachers who do not have the knowledge and skill necessary to teach the construction of new garments have been of great service to their children in teaching them how to perform the operations involved in maintenance and repair. Skill in darning holes in stockings, or rents in clothing, or eliminating spots from clothing is an important factor in maintaining a good appearance upon a small budget.

In passing through the grades the work can very well be begun with the preparation of doll clothing and proceed through a study of the raw materials of cotton goods, linens, woolens, and silk to work upon the making of fibers, knitting, and weaving. In the study of weaving the material is quite extensive because for several years a great deal of attention has been paid to this subject in the schools and wide studies have been made of primitive weaving. In the later grades the study of the textile industries can be undertaken to give the children an idea of the great mills which provide their clothing materials and the lives of the workers who spend their time in providing for their comfort.

Summary. In all teaching of clothing it is necessary to remember that the most important function of the course is to teach the children how to purchase clothing wisely, with due regard to durability, style, or becomingness. Within limits it is possible to teach them how to construct clothing, while to a much greater extent it is possible to teach them how to maintain their wearing apparel.

Shelter. There is a wide difference between the course that should be given in shelter to the children of the large cities and the rural districts. In the former the adults of

the city do very little constructing of buildings, while in the latter they do a great deal. Consequently, a part of the course in the industrial arts in the city schools lays less stress upon skill than it should in rural schools and small-town districts. Of the rural districts I wish to speak more particularly. Here again, as in clothing and foods, the important thing to teach, aside from skill, is the proper selection of building materials and the construction of out-buildings and possibly barns and houses. The farmer and the small-town man have to learn how to plan and construct such buildings when it does not pay them to employ a carpenter or builder. And even when they employ a carpenter they frequently need to give him rather definite directions about what they want to build and have enough knowledge to supervise his work and see that they are getting what they pay for.

In constructing buildings they need to have a knowledge of raw materials. This requires information concerning the different kinds of lumber, roofing, cement, stone, brick, etc. Of still more importance are the items of maintenance and repair. In fact, it is possible to construct a course in manual training upon this basis. Fuller, for instance, made a careful study of all the repairing that is done by men and women around the home, and he finds that the most commonly performed repair jobs are the following: painting, furniture repair, screen repair, putting handles in tools, and sharpening tools. It is quite apparent from this that if the teacher will study the community and discover what things adults must frequently repair, he can build his course upon this information. For while painting is not usually included in the ordinary course in manual training and carpentry, it is the repair activity most frequently carried on and should therefore be taught in the schools of the community.

Girls as well as boys can be taught many of these repair operations. There is no reason why they cannot paint as well as boys, even though they may not be able to construct buildings. Moreover, a source of irritation in the country home is removed if the wife or daughters do not need to depend upon the men of the family for the sharpening of knives, the repair of other tools that have to be used by women, etc.

It is quite apparent from the foregoing that the school laboratory should contain not merely a few hammers and saws, but a great deal of data upon costs and uses of materials. This material can be obtained in part from government and state bulletins and in part from figures obtained from the local dealers. Merely to teach the boys how to make things with the manual training tools is a futile method of handling the problem of the use of materials in constructing buildings and other permanent farm and home equipment.

In carrying the subject through the grades it is possible to begin in the lower grades with the construction of the doll house and carry on up through a study of the habitations of men from primitive times to the present. Attention should be paid to the great architectural works of art and to the modifications that are made in the construction of houses to meet differences in climate. In the seventh and eighth grades maintenance and repair can very well be made the center of the course and this can be supplemented by a study of the construction of different kinds of buildings. In the rural schools relatively less attention will be paid to the construction of furniture, but many simple conveniences for the home can be made.

Summary. In teaching the part of the course in industrial arts which deals with shelter the central idea is to give the children by the end of the eighth grade as much knowledge as possible of

the facts, and as much skill as possible in the technique, of constructing, maintaining, and repairing houses, barns, and out-buildings. Of these three objectives maintenance and repair are of more importance than construction, and in construction skill is of less importance than a knowledge of the factors which enter into the wise planning of a building and the selection of proper materials.

Projects. Owing to lack of space it is not possible to describe the other three centers of interest in industrial arts, and for further information upon these the reader is referred to Bonser and Mossman.

The industrial arts are the home of the project method, for here it is possible to secure problems in their natural setting and to carry them out in the school under natural conditions as they occur at home. A great deal of help is available for the rural teacher in the field of industrial arts because the Federal government, through the Smith-Hughes courses and through the Department of Agriculture has been working upon these problems for many years. In every State in the Union there are county agents, both men and women, who organize the children of the school and the adults of the community into clubs and community undertakings of the most practical sort. Moreover, voluminous printed material is available for the use of every country school teacher and can be obtained through the county agent, the county superintendent of schools, the nearest normal school and state university, or from the state department of public instruction. The difficulty of the teacher in this field is not so much to find material as it is to select the proper projects.

If, however, there is a county agent in the county in which the school is situated, it is the duty of the teacher to coöperate fully with him in his projects and in return to secure from him all the assistance that he is able to give. It is the duty of the teacher to do this because his main

business in teaching school is to fit his children to become efficient citizens in the community, and for this there is no better method than to coöperate closely with the county agent in his work. Unfortunately in some schools the teacher lacks the spirit of coöperation or fails to understand the significance of his contribution to the work. In other cases the county agent has so small a conception of the uses he can make of the school in his work, that the school work and the community projects are run independently of each other. This is unfortunate but can be easily remedied if the county agent and the teacher have the proper coöperative attitude toward each other.

2. Interest

The problem of getting interest in the industrial arts in the lower grades is a very simple one to solve. The children like to work with their hands. The interest is immediate, so consequently the chief business of the teacher is to keep them interested by having them work upon interesting and useful material and by introducing basic and theoretical knowledge only where its value can be seen by the pupil.

This interest may be heightened by the use of projects and problems, for the children are not merely told to do things but are given an opportunity to see how they should be performed.

The Personality of the Teacher. In developing interest in the work in industrial arts as in all other subjects no element is of more importance than the personality of the teacher. Conspicuous among the traits which he needs to develop is an enthusiasm for the work. If the teacher is himself interested in it and endeavors to bring out all the interesting points upon which he can lay his hands, the enthusiasm becomes infectious. This leads us to the second and third trait. The teacher must combine with enthusiasm the

ability to lead children to study enthusiastically. He must have an enthusiastic attitude when he teaches and he must be able to show the children the value of what they are doing. He must also have considerable resourcefulness in meeting new situations. The course is relatively unorganized at present and he must therefore think up for himself ways of making the work attractive. This resourcefulness is partly based upon knowledge of what to do and this can be obtained by reading widely in the materials of the industrial arts. To aid him in doing this a wide variety of material is available and he should hold it to be part of his duty to spend some of his own money if he cannot obtain money from his school trustees for securing the proper material for the school laboratory. Fortunately, much of the material can be obtained at small cost in the Federal government bulletins.

Illustrative Handwork. It is possible to get the children interested in the industrial arts by using them as a means of illustrating work done in other subjects. Scissors may be used on old magazines to cut out familiar words, sand-table construction may be utilized to represent scenes and events. Clay modeling can be used with excellent results in illustrating stories. Miss Dobbs has very well illustrated many uses to which handwork may be put. Running through her material we find a sand-table reproduction of gold mining in California, of Robinson Crusoe, of primitive homes in the Philippines, and of a cliff dweller. Following this there are many illustrations of the use of posters to supplement the study of the Sleeping Beauty, Jack and the Beanstalk, Cuba, events in history, views of a Norman Castle, the story of Daniel Boone, the evolution of travel by land, and statistical posters in geography.

The number of uses of handwork as an illustrative medium is so enormous that selection is difficult to make.

References to the sources will be found at the end of the chapter.

3. Methods of Teaching

Busy-Work. We can, perhaps, best describe the methods of teaching the industrial arts by contrasting the proper method with the term "busy-work." In every rural school the problem of keeping the children busy at their seats while the other classes are reciting is difficult from the point of view of discipline. Consequently teachers quickly seize upon any sort of work which will take time to perform, and in such work those tasks which involve the use of the hands are most time-consuming. As a result of this attitude we have what is known as "busy-work," where by the term we mean work which is invented primarily for the purpose of keeping the children occupied.

This is not the right attitude to adopt in approaching the industrial arts. It is essentially mechanical. It is artificial because the industrial arts were not developed to keep people busy. They have evolved because they are useful and the teacher must always bear this in mind in teaching the subject, for while it is true that handwork does keep the children busy the motive for teaching it is educative and not mechanical.

The Problem Method. Here the work which the children do should be done only to solve problems. In using the doll house in the primary grades as a center of industrial work the object is not to tell them to make things, but to use the doll house as a problem, which involves a great deal of thought. In building the house they study the construction of the house, its rooms, doors, windows, stairways, etc., all in relation to the central problem. Then when the house has been planned the problems of how to build it arise, and in the solution of these the children participate by discussion. When they have, with the teacher's

aid, found ways of solving their problems they proceed in class and at their seats to carry out solutions through the medium of cardboard, and the other materials used. By this means they not only use their hands but they use their minds as well, with the result that their interest is maintained, their ability to think is developed, and their knowledge of the usefulness of what they are doing is deepened and broadened.

The steps involved in the solution of the problem are important. In the first place it is very important that the children see the setting of the problem and get it clearly defined. For instance, in the building of a hen-house they need to know the purpose and use of the hen-house and to determine exactly what sort of hen-house they will build. Then when they have done this they think over and collect suggestions about how to build it, and when they have collected all these suggestions they select one of them and proceed to build. When it is finished they look it over to see whether or not they have built it so properly as to perform the purpose which they set up at the beginning.

Dewey has defined these five steps as follows: (1) There is a felt need. This means that the child realizes that there is a need for doing something. (2) This need is defined in such a manner that he knows exactly what is needed. (3) He collects suggestions about the different methods of meeting this need or of solving the problem. (4) He elaborates these suggestions or thinks them over to see which will work and which will not, and tries out the one that he thinks will work. (5) He verifies this after he has completed it by seeing whether or not it is what is needed to meet the needs with which he started out.

The teacher who tells the child exactly what to do does not give him an opportunity to reason. The child does not define his problem nor does he have an opportunity to

think about how to solve it; he is merely told to do something. By such a mechanical method he becomes a follower and not a leader. He is not trained to think for himself and so has to depend upon somebody else for directions.

Such a process of reasoning involves a great deal of time and it is much easier for the teacher to tell the child exactly what to do, while the work can be turned out much more rapidly. But in teaching we are concerned both with the product that is turned out and with the child who produces it. So, often, when it seems that the work is moving slowly because the children are doing it, time is really saved because of the fact that by doing it they are getting a better education than if they merely followed orders.

Summary. All hand and head work connected with the industrial arts should be taught by the problem method. It should not be given merely to provide busy-work. In using the problem method we must see that the children get a chance to define their problems and think and plan methods of solving them as well as to carry on the necessary handwork.

Projects. The problem method by which children reason things out for themselves is the center of the project. Those problems which the child meets outside of school in their natural setting are projects. That is to say, the project is merely one kind of problem and therefore the problem method is used in projects.

As has been said in the preceding section, a great deal of help is given the teacher in the field of the industrial arts in rural schools because of the activities of the Federal government. But the teacher may organize projects other than those used by the Federal agents. What the projects are depends upon the community, but the method of selection is simple. The teacher selects valuable projects which can be handled in school and builds his instruction upon the basis of these.

Tests. No simple tests of a practical sort have been worked out, as in many of the other subjects, partly because the curriculum has not been standardized in this field and partly because the technique of testing is quite difficult.

Alternation. Sewing is an upper-grade subject because the needle is too fine an instrument for the primary children. Woodwork and cooking are likewise advanced subjects, depending upon age rather than grade. The hammer and saw in building construction can be used to advantage in the seventh and eighth grades. In all of these subjects the seventh- and eighth-grade children can work together upon a two-year program. The present seventh grade can work with the eighth grade, which has already had the first half of the program and the next year the seventh grade, which will then have become the eighth grade can cover the first half of the work which they missed as a seventh grade. In the lower grades the first-grade children will probably have to work by themselves because of their very great immaturity, but the work of the second and third grades can be alternated, while probably the work of the fourth, fifth, and sixth grades can be based by alternation upon a three-year program. In case it is found that the first- and second-grade work can alternate upon a two-year program, then the third and fourth, and fifth and sixth, can alternate upon a two-year program.

Summary. In conclusion it may be said that in the work of industrial arts the chief problem is the securing of the proper materials for carrying on the work, and this problem is made more difficult because teachers have not been adequately prepared in the subject. But the resourceful teacher can pick up a great deal for himself. The problem of interest is not a difficult one because the industrial arts lie so close to the natural impulses of the children. In presenting the material the teacher must be careful to make it constructive by utilizing the problem idea, and must avoid with great care the natural tendency to do

all the work himself and allow the pupils to follow directions. Finally, the teacher should use every possible opportunity to tie up the work of the school with the governmental agencies which may be operating in the community.

REFERENCES FOR CLASS READING

- BACHMAN. *Great Inventors and Their Inventions.*
- BALDERSTON. *Housewifery.* (Labor-saving devices, cleansing, renovating, disinfecting, and fumigating operations.)
- *BONSER and MOSSMAN. *Industrial Arts for Elementary Schools.* (An indispensable text for teachers, giving in great detail an outline of material for the first six grades in the six fields of the industrial arts.)
- COOLEY and SPOHR. *Household Arts for Home and School.* (Written for elementary and junior high schools. Useful for the grade teacher.)
- CRAWSHAW and SELVIDGE. *The Teaching of Manual Arts*, pp. 41-63. (Suggestions for many problems.)
- DOBBS. *Illustrative Handwork.* (Contains in detail many suggestions concerning the use of handwork in illustrating the other subjects of the curriculum.)
- DYER. *Textile Fabrics.* (A manual providing information upon how to select, and what to look for in selecting, textile fabrics.)
- Farm Bulletins from the United States Department of Agriculture, Washington. (Lists obtained from the Department of Agriculture.)
- FORMAN. *Stories of Useful Inventions.*
- GRIFFITH. *Teaching the Manual and Industrial Arts.* (A general discussion of the principles of teaching the manual arts.)
- KINNE and COOLEY. *Food and Health.* (Detailed information on the preparation of meals, canning, calories, and food costs.)
- TAPPAN. *Makers of Many Things.* (Includes matches, gloves, rubber, paper, books, lead pencils, dishes, watches, shoes, cotton goods, and silk.)
- WELLS. *How the Present Came from the Past.* (Interesting Information on the beginnings of civilization.)
- WINSLOW. *Elementary Industrial Arts.* (Well-illustrated discussions treating brick, tile, cement, concrete, iron, steel, glass, and wood-work.)

CLASS QUESTIONS

1. Trace the evolution of land transportation or of some other activity showing as far as you can how the methods were dependent to a considerable extent upon environment, and, as far as you can, arrange the methods in order from least to greatest complexity.
2. Recall your experiences as a pupil in the primary grades. How were you kept busy?

3. Watch a five-year-old pupil for an hour when he is among "things," and see what he tries to make.
4. When I was a boy, my teacher would not let me draw pictures in school. Did she do right?
5. Give ten instances of cases in which boys have made useful and rather complicated things out of wood.
6. Is it your experience that girls should know how to handle a saw, hammer, and plane? Why?
7. What are some of the modern industries you know sufficiently well to make the children understand them? Where will you look for information about other industries?
8. What are some simple things that boys and girls can do in school, which are the essential processes in these industries?
9. What are the different processes a boy needs to know in building a chicken coop with a window? Draw a picture to show the kind of chicken coop.
10. What are the different processes a girl needs to be familiar with in making a hat?
11. What would you do if, after you had introduced handicrafts into the primary grades, a parent should tell you that he sent his boy to school "to learn and not to do all this foolishness"?
12. Select four lessons from reading-books and describe the kinds of illustrating you would have the children do, indicating the particular passages to be illustrated.

CHAPTER IX

GEOGRAPHY

1. Subject-Matter

Function. Geography is the subject in which we study our relationship to what is known as our physical environment. Originally geography dealt entirely with place. In its simplest form geography is concerned with place. Broadly speaking, it tells us where things are. In its later form it tells us why things are as they are in terms of physical environment, such as topography, climate, etc. A few illustrations will make these ideas clear. Man has always had certain things that he considered to be of value and their location of use to him. There is a kind of geography of the house, for instance. We may imagine that the housewife is interested in the ice-box, some old pictures, a needle, and the broom. In such a case it is very important to her to know where these things are, that the ice-box is in the basement, the old pictures in the attic, the needle in the sewing-room, and the broom in the kitchen. A knowledge of place helps her to get control of, or handle, these things effectively. Outside of the house it is of interest for the husband to know that he can get better merchandise in New York, that he can find a book in the public library, or that a customer lives at the corner of Forbes and Murray. In short, the place idea is connected with everything that we do and it is necessary for us to have some idea of location if we are to be effective in our work. This is quite clearly brought out in ancient geography in which we find, for instance, that a great deal of

attention is paid to religious geography, or the location of religious objects. We see at once in such geography that because the people of those days traveled mostly on religious errands it was necessary for them to have a knowledge of places where they would naturally go upon such journeys.

However, as people studied the earth more carefully they soon began to learn that physical environment had a very great effect upon the things which men wished to do. They found, for instance, not only that wheat grew well in the North Central states, and that it did not grow in the Amazon Valley, which were matters of place alone, but that there were certain reasons for wheat growing in one place and not growing well in the other. As they studied into the reasons they found that climate had a great effect upon the wheat. They discovered also that the nature of the soil and the topography of the country had to be taken into account.

So geography has come to include more than location and endeavors now to discover the reasons in terms of the physical environment. Consequently in the study of geography the teacher has two types of things to do. He must teach the location of important places and he must give the reasons for differences which are due to the physical environment. The first of these is known as place geography and the second is sometimes described as rational geography. In place geography are taught the continents, oceans, important rivers, mountains, cities, and countries of the world. In rational geography is explained why New York City is larger than Kalamazoo, Michigan, why rice can be grown in China, oranges in Florida, and cotton in Texas.

Place geography gives us some control of values, but rational geography increases this control. Place geography

states that tea grows in China, but rational geography describes the conditions of climate and surface which prevail in China where tea is grown, and when these are known it becomes possible for the Agriculture Department at Washington to seek for a place in the United States with the same physical conditions and to expect that if these can be found, tea can be grown there equally well. As a matter of fact, the Department of Agriculture has scouts all over the world studying the conditions under which plants are grown, with a view to introducing into the United States those plants which have been grown successfully under conditions similar to those which prevail in different regions of our nation.

Summary. The function of place geography is to tell us where we can find things in which we are interested, and the function of rational geography is to explain in terms of climate and physiography why we find them in those places.

Structure. The content of geography may be discovered by an analysis of values and of places. If we analyze values we find a large variety of things in which people are interested. There are, for instance, the industries. These are in part controlled by the facts of geography. For instance, climate has much to do with the industry of agriculture and physiography has a great influence upon manufacturing, because much of its success depends upon distance from markets, from the source of raw material, etc. Then there are political values, which may be controlled by climate and physiography. Particularly strong is the influence of physiography upon politics, for national boundaries are often determined by mountain ranges, oceans, etc. We have the biological values, also; for instance, a very interesting field of investigation is that which devotes itself to discovering to what extent the nature of plants and animals is dependent upon character

and physiography. To these may be added a great number of values which geography helps us to understand and control.

When we analyze the place idea we discover two main divisions — climate and physiography. These two great divisions are subdivided — climate is composed of the three ingredients of temperature, moisture, and winds, while physiography is variously divided into oceans, rock formations, erosions, soils, and other factors which may be found in physical geography textbooks.

We get, then, our organization of geography first by classifying values, or things of interest, and second by showing what effect the different physiographical and climatic elements have upon these.

What is known as physical geography is what is called the place element, i.e., the element of climate and physiography. To study geography, however, we have to relate this physical geography to things of value, such as plants, animals, industries, etc., to show where they are and why they are there. The basic reason for the study of the surface of the earth, capes, bays, rivers, mountains, etc., is to prepare the pupils to use their knowledge in understanding the things which they think, from time to time, are worth while.

Summary. Geography is organized on the one side by classifying values and on the other by analyzing physical geography into its elements. These are brought together by showing how the values are related to climate and physiography.

Ideals. In the study of geography four ideals are of importance. First may be mentioned the ideal of developing a good memory. If geography is to be of permanent value it is essential that the student should have a *permanent body of geographical facts*. He cannot always be running to a book to find out where important places are and if he does

not remember his ideas are hazy and his actions ineffective. The second ideal is that of *good judgment*. This is particularly useful in helping him to claim an intelligent understanding of the influence of geographical conditions. Third, we should seek to develop a keen and *discriminating visual imagination*. He will be greatly helped in his geography work if he realizes that geography is not so much a collection of names as it is a collection of pictures of the world. He should be able to visualize mountains, capes, cities, and continents. Fourth, *broad-mindedness* is of importance as an ideal because it helps him to have a sympathetic understanding of the nations of the world. Geography will teach him that where nations are different there are physiographical differences which are the causes in many cases. He will realize that when people of other parts of the world differ from him it is not necessarily because they are inferior. Probably under the same conditions he would himself not be greatly different from them.

The Teacher's Objectives. In teaching geography the teacher has three chief objectives. The first of these is to so teach the child that he will have a love for geography. The second objective is the memorization of important places. This is particularly significant at the present time because the emphasis upon rational geography has been accompanied by a corresponding lack of emphasis upon the use of the memory. It is absolutely essential that the child should memorize the important facts of place geography so thoroughly and automatically that he will never forget them. Care should be taken of course in deciding what should be memorized, but once these things have been decided upon drill should be carried on to the point where lists are memorized automatically. The third objective of the teacher is to give an understanding of the effect of geography upon places, industries, commerce, etc. When

the children have finished the course they should have some intelligent understanding of the influence of geography upon the major activities of society.

Course of Study. From the foregoing facts these two things are evident. First, much of the material found in school geographies is not geography at all. Descriptions of governments, customs, races, and industries do not belong to geography as here defined because they are not studied in relation to climate and physiography.

However, since this information is interesting and valuable it might as well be taught in geography as elsewhere. The customs of the Chinese are of importance to us and since we have no subject called anthropology in school wherein these facts may be studied, geography is as good a heading to teach them under as any others. However, as Hall says, "Through it the American who leaves school at the sixth grade gets his first and almost only peep at the wide world in which he lives. It is his elementализed university course, in which all is reduced to the lowest and simplest terms. It is introductory to almost everything else, or can be made so."

The second fact is that to make up a course of study one must select, since there is by far too much material to teach. To select one has first to decide upon the most important things to teach. In planning a course of study one has to arrange this material according to the needs and interests of the pupils from day to day and from grade to grade. When one has selected the most important material and has arranged it according to the stage of development of the children, he has prepared his course of study.

Textbook makers and authors have already done this. How well it has been done is not so certain, since we do not have a unanimous opinion as to the most important topics to teach, nor anything like a unanimous opinion about the

order and arrangement of the subject-matter according to the nature of the pupil. For instance, in one geography twenty-five pages are devoted to Africa and twenty-six to South America, yet the commerce with, and the general news from, South America is twice as great as that from Africa. Canada in the same text has thirteen pages devoted to it, but the commerce of Canada is more than that of South America and Africa combined.

Questions of place and a thousand other criticisms arise in connection with geography texts and material. But this fact cannot be gainsaid — that the American geography, with whatever faults it has, is the finest and best illustrated geography textbook in the world. It is sufficiently good for the teacher to follow whatever text he may use with as much closeness as he follows any textbook, remembering that he has to deviate here and there when in his judgment the needs of his pupils seem to call for a departure from the book.

Summary. The course of study is made up by picking out the important facts in geography and arranging them by grades to suit the interests and needs of the children. In this there is a great difference of opinion, but the teacher without a large amount of geography training should follow fairly closely whatever text may have been adopted for his school.

Supplementary Material. One of the chief difficulties of the geography textbook is too great compactness. Due to the limitations of price, geography textbooks contain the information so compactly that children do not get clear pictures of what is being taught to them. Consequently it is necessary to supplement geography textbooks by a wide variety of reading. This material is partly found in what are known as geography readers, but is chiefly gained from other sources. The newspapers and magazines can be gleaned for stories about other countries. Illustrated magazines are particularly satisfactory for this purpose.

Geography scrapbooks are made by teachers to be studied by the pupils at their seats. Frequently the children themselves collect this material for the teacher. Stereopticon photographs are used to good advantage.

The sources of the material are numerous and the teacher must have a clear realization of the fact that the geography textbook must be supplemented from other sources that are at his command.

Home Geography. Home geography is the only sort of geography that people have who do not read books or travel, but so far as making a living is concerned it is not absolutely essential that any one know any geography outside of that which he wishes to use. If, however, he reads the papers or travels it is almost necessary for him to have his geography very considerably enlarged.

One does not need a book or a school to teach him his home geography because he can pick it up for himself as he needs it. For this reason, when home geography is taught in school it has two purposes. It is intended principally to get the pupil ready for world geography. This it does by teaching children the meaning of geographical terms and definitions by illustrations taken from their own community. Then when these terms are thus made clear they can be used in world geography. For instance, children will have to use terms like "river bed," "delta," "canyon," and so on, and these will mean little unless illustrated in the topography surrounding the school. If children are taught what a river basin is in connection with the local creek, an island in the same creek, or a delta at its mouth, they would understand these terms when they met them in world geography, but they cannot understand them clearly without this foundation. It is also of use in bringing into the classroom materials and processes which are part of the ordinary environment of the child. If, later on, in rational

geography, the sources of the raw materials for food, clothing, and shelter are to be taken up and explained in terms of climate and topography, it is important that the children study these in the classroom as examples of things that are of interest in the local community. Then later, when the student takes up the study of distant parts of the world where these things come from he will have a knowledge of the articles which are to be studied.

Home geography therefore involves among other things a good deal of excursion work. This means that the teacher will take the pupils, as a part of the school procedure, out into the community around the school to study the topography of the country. Objections are frequently raised to these excursions on the part of the parents at first, but when it becomes a recognized part of school procedure these objections disappear. In taking such trips the teacher must prepare for the trip as carefully as he prepares for any other lesson. He must know exactly what he is going to see, the children must be in the student attitude and be prepared to take notes and get educational training out of the excursion. In brief, the teacher merely shifts the place where the class is taught from the classroom to the part of the community where they can see what is to be taught.

McMurry says there are seven principal topics which should be studied in home geography. These are: (1) food products and the occupations related to them; (2) building materials and the related trades; (3) clothing, the materials used, and the process of its manufacture; (4) local commerce, including roads, bridges, and railroads; (5) local surface features including streams, hills, woods, etc.; (6) town and city government, including the courthouse, the city hall, the city council, etc.; (7) climate and seasons, including the sun, winds, storms, and heat.

It is not difficult to organize this work. One can begin

almost anywhere and take up material in almost any order. The order, however, depends largely upon what text is used and upon what seems to be the next thing to take up. The children not having gone far enough into geography, there is no necessity for a logical arrangement; a psychological organization is better. When the terms and ideas of geography are studied in this irregular order, one thing alone is needful. They must be made to stick reasonably well in the minds of the pupils in order to form a working vocabulary.

Summary. The function of home geography in the schools is to give the pupils a working vocabulary and a working knowledge in preparation for world geography.

Standard Tests. Some few standard tests have been made. Notable among these is the Hahn-Lackey geography scale which includes about an equal number of memory and thought questions. However, the standard tests in geography have not been developed as fully as in some other subjects and are still in the experimental stage.

Home-Made Tests. There are five types of questions which are useful in testing and these can be introduced as variations from the usual geography examination. Quoting from Branon, these are as follows: (1) Informational — (in map geography this can be varied by giving the students outline maps and asking them to look places up on the maps) — "Where is New York City?" "Where is Poland?" (2) Interpretive — "Why is there a semi-arid region east of the Rocky Mountains?" "Why is the Amazon basin sparsely populated?" (3) Statements to be filled in — "The two chief rivers of Italy are the and the" (4) Statements to be answered "yes" if entirely correct and "no" if partly wrong — "Chicago, located near the south end of Lake Michigan, is the largest city in the United States." "The United States imports large

quantities of raw sugar.” (5) A meaningful statement to be made for a word or expression given — “Vesuvius . . . Vienna . . . rubber . . .” (Such a statement might be: “Rubber is imported from the Philippines.”) (6) Varying degrees of definiteness — “Tell why New York City has grown so rapidly.” (The pupil is left to make a brief or elaborate statement, as he desires.) “Name five reasons why New York City has grown so rapidly.” (The pupil is here definitely limited.) “Name all the reasons you can think of why New York City has grown so rapidly.” (An attempt is here made to get the pupil to exhaust his information relative to the question.) (7) Questions asked by pupils — The pupils are asked to make a list of informational and interpretive questions bearing upon such a country as Japan.

Particular attention is called to the type of test made by Brandom and Reavis, which applies to any country. It is too long to quote but will be found in the reference cited at the end of the chapter.

2. Interest

The specific appeal in geography may come from two sources — from an immediate interest in geography or from the selection of highly interesting values. The former requires no discussion, because if it is there, we have nothing further to do about it. But if not, then the method of getting interest in geography is to connect it with values which have to be placed and explained.

These values are of three or four sorts. First of all, there is the appeal to the romantic element in pupils, which no other subject can satisfy so well. The arctic circle, from which come back tales of heroism and adventure, upon maps on which the little stars mark the northward advance of discoverers, is filled with a romance that feeds fat the

idealism of childhood. At the time when this is studied, columns of supplementary and library reading should be fed them as fast as they can masticate it. The bizarre effects of foreign dress and costumes, the beauty of mountain scenery, the breath-catching jeopardy of glacial crevasses, the luxuriance of the tropics and the date palms of the desert awaken such longings and psychic reverberations in the growing boy as will perhaps never be awakened by any other means or at any other time. It is this romantic love for adventure that makes travel interesting to so many people and sends hardy souls into unexplored dangers. Geographical readers, simple books of travel and discovery are indispensable.

A good course of geography in the fifth grade can be taught through books of travel if, as the pupils read them, they study the map with the guidance and patience of the teacher to aid and steady them. The course will lack system, to be sure; but geography, at best, cannot be very systematic, and there is less necessity for system in geography in the fifth grade than in many other places.

This interest takes on other attractive forms, such as that of taking imaginary trips during imaginary vacations. Classes have worked up a very considerable enthusiasm for a number of things, such as time-tables, railway fares, cities, kinds of cattle, climate, etc., by taking an imaginary trip in the winter to Texas to buy cattle. So, also, a trip of like reality can with profit be made to Colorado or British Columbia, for which many dozens of pictures showing the grandeur and sublimity of the Rockies have been collected by a class.

In like manner, interest may be stimulated by having a class correspond with a class of equal age in a far distant locality amid different scenery. Here, again, romance taps reservoirs of interest, as is shown by the flood of pictures

and descriptions that pass back and forth between such groups.

In addition to the appeal to romance, there is a practical appeal. That is, pupils need the geography in other material activities which they are carrying on. For instance, in stamp collecting, a boy is led far afield as soon as he begins to gather the stamps of any foreign country. Nor can the collector hope to carry on his work intelligently without getting a fairly good hold upon the location of countries.

As in history, school work can be carried on so that children have to study geography in order to understand what they read. One may study the Civil War in many ways; but if the student tries to see why the campaigns were planned and waged as they were, he must fall back upon his geography. He will find that facts of geography, and not morals, made the Southern States slaveholders, and the Northern States abolitionists; that geographical conditions, not nerves, gave birth to the Populists. Geography explains the particular routes that westward immigration took. Climate makes the South different from the North to this day, in temperament, habits, and industries; and geography explains how. So not only may the teacher so teach history that geography may be learned; but unless history is taught through geography, it will not be learned as it ought to be.

Besides the appeal to romance and to the practical problems in the lives of the pupils, an appeal can always be made to curiosity about common and important industries and products. For instance, the history of commercial products is a matter of interest to children. One teacher saw a load of hides hauled across the city, and made that rather common sight the beginning of a series of geography lessons.

She inaugurated the series by the question, "Where do those hides come from?" The answer led to the station, to the stockyards at Kansas City, and from there to Wyoming. Before they were through, they knew where the grazing lands were, why they were grazing lands, how the cattle were raised and cared for by ranchers and cowboys, how rounded up and shipped, and how slaughtered and finally disposed of. This load of hides was carried on to the shoe shop and was not left until the resulting shoes were on the feet of some boy or girl.

Similar series may be introduced by other stimulating questions, such as, "How do we get raisins?" or, "Where is rice produced?" or, "Where does silk come from?" Such questions are easy to select and not infrequently easy to develop into a well-rounded geographical topic. In fact, many wholesale houses distribute literature and studies of the process of manufacture, for the use of teachers and children in school.

Summary. In getting an interest in geography, appeal may be made to romance and adventure, to interest in practical activities in which the children are engaged, and to curiosity as to the origin and history of common and important articles of commerce. Geography is capable of being made a very interesting subject, if an alert teacher has charge of the class.

Correlation. Geography is related to almost every subject in the world, for the all-sufficient reason that almost everything in the world is more or less dependent upon climate or the physical condition of the earth. History we have seen to be dependent upon geography, which is called "the eye of history." Botany, likewise, is dependent upon climate and soil, since the form of a plant is determined very largely by its environment. Modes of dressing, with all the industries dependent upon the need for clothing, vary with the climate. And architecture, from the igloo of the Eskimo to the palm hut of the South Sea Islander, is

dependent almost entirely upon the physical conditions of the locality.

So geography is easily in place in almost every subject of the course of study, and the connections should be made wherever and whenever possible. Particularly should it be used in connection with language, literature, drawing, history, nature study, and agriculture.

But in another sense many subjects are correlated with geography as an aid to it. Arithmetic, for instance, is constantly needed in geography. So, also, are art and pictures. Reading, of course, is needed at every turn. The manual arts, particularly painting, sand-table work, and other forms of representation, help to illuminate geography and make it intelligible. In short, to a very considerable extent all subjects are needed to make clear the relation between the things we value and the places where we can find them.

3. Teaching Geography

Problems and Projects. The most outstanding difference between the teaching of geography a few years ago and at present is connected with the development of the problem method of attack. Whereas formerly we were concerned in teaching with the memorization of facts, the present tendency is not only to teach facts thoroughly, but to give the children interesting problems to work out in connection with these facts. A few illustrations selected at random are the following. Instead of merely teaching facts about Palestine, the question is raised: "Can Palestine again become the land 'flowing with milk and honey'?" Teaching the geography of middle Europe, such a question as the following can be introduced: "Has Poland a better opportunity than Czecho-Slovakia for national development?" In teaching the geography of China the question may be

raised: "Account for the dominating influence of the inland state of China." The most suggestive book for teachers in handling the project method in geography is that written by Smith and cited at the end of the chapter. This contains three hundred pages of illustrations of how to use the problem method. As an illustration of the study of problems arising in connection with the study of climate, the following are selected from a list of thirty:

- (1) Why is the atmosphere more dense at sea level than at high altitudes?
- (2) Why is a cloudy night in autumn usually warmer than a clear night?
- (3) Why will a sheet of paper over a flower bed save it from frost?
- (4) Why is mercury used in a barometer?
- (5) Why does the mercury rise and fall?
- (6) Why does the mercury in the barometer stand higher at sea level than on a mountain side?

Other types of problems can be selected at random as follows:

Why are so many meat-packing centers in, or near, the Middle West? Why is dry-land farming necessary in the High Plains section? Why is forest conservation a national necessity? What caused the people in New England to settle in small towns while in Virginia they scattered over large plantations? What industries can one find in the city of Philadelphia? Why do so many people live in the North Atlantic states? In what ways is Argentina a rival of the United States? What are the advantages of the position of Buenos Aires? Have the plains of Russia been an advantage or a disadvantage to her development? Why is Lisbon colder in summer than Pekin? Of what advantage is the Suez Canal to the commerce of the world? Why does the finest wool in the world come from Australia? What conditions have made Italy a great rice-growing country? Why should people make their homes in Iceland?

A glance at these questions shows the tremendous amount of interesting material for problems in the study of geography. The limitations of the use of the method are two. First, the amount of knowledge that the teacher possesses, and second, the amount of supplementary reading material that is available in the school. Yet even where

the teacher does not have an unusual fund of knowledge he can, if he is alert, find in geography many questions for which he knows the answer and if he is alert, he will use these wherever he can. Moreover, a great many problems can be made up from the text, where only one text is available. A compilation of lists of problems is perhaps less dependent upon the knowledge of the teacher than upon his interest in making them up from the material at hand.

Summary. Ability to answer important and interesting questions intelligently in terms of geography is of first importance in the teaching of the subject. To this end the teacher should, wherever possible, assign problems which involve interpretation of geographical facts. These problems are easy to discover by the teacher who is interested in finding them.

Drill. The first thing necessary for the wise use of memorizing in geography is the determination of the important items to memorize.

4. Methods of Study

Once the teacher has decided upon the important items he should, in my opinion, insist upon their memorization. I am sufficiently old fashioned to believe that the important capes of North America on the east and west coasts, together with the rivers, bays, and islands, should be memorized until they can be repeated with the glibness of "Old Mother Hubbard." The American boy, in like manner, should memorize the rivers of the United States in order, the states and their capitals, according to plan. In fact, he should memorize everything that is of enough importance to justify it. It often stands one in good stead to be able to repeat without thinking: "Maine, Augusta; New Hampshire, Concord; Vermont, Montpelier," etc. In geography, whatever is worth doing, is worth doing well; whatever is worth memorizing, is worth

memorizing well; and whatever is going to be used a great deal should be set aside for memorizing.

Textbook Study. Geography is essentially a textbook subject and needs to be studied with that in mind. In studying about any country, or state, or province, there is one thing necessary at the beginning. The teacher must decide what are the important things to be studied. For instance, in the Tarr and McMurry geography, which I have before me, there is given a description of Egypt (Book II, Part II, pp. 378-81). In taking up this subject, the first thing to do is to decide what topics are worth considering. I should say that they are: (1) the Nile, (2) agriculture, (3) history, (4) present status, (5) the Suez Canal, (6) the two great cities. Others might not agree with this list, but if I were teaching the geography of Egypt, these are the points I should feel an American child ought to know about Egypt.

The next thing in preparation for study is to tell the pupils what these points are, and have them pay particular attention to them. In this lesson, I should set some questions about Egypt for them to study:

1. What is the effect of the Nile upon Egypt?
2. What crops are raised in Egypt that might compete with American crops? Do they?
3. How is Egypt governed now?
4. Compare the Suez Canal with the Panama Canal.
5. Why is Egypt not now so great as it once was?
6. For what are its two chief cities important?
7. Draw an outline map locating the chief features.

Three things should be noted about these questions. *First*, they do not permit parrot answers. They require thought. For instance, Number 2 might have been, What crops do they raise in Egypt? But by giving it a little turn one gets the same items, but from a novel point, because Egypt is looked at in relation to American mar-

kets. The *second* point is that, when they are answered, the pupil has sifted from the whole lesson those points that ought to be memorized. By throwing the information into the form of answers to questions a better hold is secured than would be if the teacher had said, "Read up on the Nile, agriculture, history, present status, and important cities of Egypt." Moreover, when the question is thrown into such a form that it will not permit of a merely memorized answer, it contains for the student a challenge that is decidedly stimulating to thought.

The *third* point worthy of note is that these questions admit of reference reading in other geographies and geographical readers if they are available, as they ought to be. For as fast as possible, pupils should be led to read in several books and to cull from each anything that will answer their problems.

Summary. In setting assignments in geography, the first thing is to decide what are the points that are worth remembering about a country. The second thing is to call attention to these points by asking an assignment question about each one, so that when the pupil is getting the answer to the question he is learning the selected facts.

Imagination. Geography, history, and literature are subjects that, of all school subjects, depend to the greatest extent upon imagination. For this activity of the mind is the one by which we build up a picture of things that are not present to the senses. If the word *Egypt* brings to my mind's eye a picture of pyramids, sand-swept plains, the winding Nile, and the delta at its mouth, it can do so only if the imagination helps. In the chapter on spelling we mentioned several different types of imagery that are at hand for us to use, and showed how in some people one type and in other people another type predominates. In this chapter, however, we wish to lay stress upon two

other factors, which have to do with the process by which we call up, or build up, pictures of things.

The first fact of importance is that every image is the product of past experience. When I am asked to imagine a rose as large as a cart wheel, I may never have seen that sort of rose, but if I have seen a rose and a cart wheel, I can then imagine a rose as large as one. But if I have never seen a rose or a cart wheel, I cannot get the mental picture of a rose as big as a cart wheel. If a fanciful novelist draws a picture for us of the inhabitants of the moon or of Mars, he picks up a number of characteristics with which people are acquainted and puts them together in an odd way; but he cannot build up a picture whose ingredients are not in past experience.

This shows us that all world geography is dependent upon the past experience of pupils and, particularly, upon home geography. For instance, the following sentence can be understood and a clear picture formed only when the pupils understand the words and terms: "These mountains form a circle enclosing a broad level area called the Hungarian plain, through which the Danube flows." Unless the children have a mental picture of a circle and level plain, they would hardly be able to get any idea of the topography of Austria-Hungary.

These pictures and definitions of terms in geography it is the business of the teacher to develop from the practical experience of the pupils. If the teacher wished the children to build up a picture of the Hungarian plain, and if the pupils did not get it by reading, he should refer them to a similar location in their neighborhood if such a one could be pointed out: a level area surrounded by a circle of hills with a stream running through. If such a landscape did not exist in the neighborhood, an image of a circle, of a level plain, of encircling hills, and of a stream running

through, should be called up one at a time and put together upon the request, "Imagine what this looks like: a great level plain surrounded by a circle of mountains, with the great Danube running through it."

In every case the children must start from their own immediate experience, if they are to get any clear idea of what they read. The second important fact to be borne in mind in the teaching of geography is that the geography pictures, or images, must be made very concrete. What I mean may be made clearer by a contrast.

One may teach the sentence, "The northern and western half of the Chinese Empire is a region of plateaus, in some places as high as most mountains, and crossed by many mountain ranges," in two ways. It may be hurried over and tested by one or more questions that require only a memory of the words to answer. The following is such a question: "Describe the surface of the northern and western parts of the empire." Obviously, this could be answered by the words, "It is a region of high plateaus crossed by mountain ranges." But there is no certainty that they have any picture of that portion of the empire.

It may also be taught more slowly and with assistance, so that they can *see* a high plateau, as high as some mountains, and crossed by mountain ranges still higher. And if this is an important fact, it ought to be taught slowly and vividly.

How to get Concrete Images. A very important question follows from the foregoing: How can such vivid pictures be built up? To this psychology has one general reply. They must be built up out of past experience. And it has, also, a number of detailed aids in reorganizing.

Pictures. One of the greatest aids in teaching geography images is pictures. Not everything can be pictured, and even when it can be, there is a limit in volume. But as far

as possible, everything described in geography should have a picture, if one is obtainable. Geographies by different writers should be on the library shelves. Children should be encouraged to clip geography pictures from papers and magazines at home. School scrapbooks classified by continents, and in the case of Europe and North America by countries, should be filled and added to from year to year. If money is available, stereoscopes which add the third dimension of depth should be at the disposal of the pupils. These pictures, both in books and out, should be handy, so that the pupils may look at them whenever they have spare time.

Maps. Maps help to make conceptions in world geography clear and definite. Flat maps cannot be accurate, because the earth which they represent is round, but they are accurate enough for children. They should be used extensively, and the pupils should draw maps for themselves.

Many teachers compel children to spend a world of time upon the technical details of maps, and most of this time is wasted. Ninety-nine per cent of all maps drawn should be sketched. They are not intended to be pretty, but to show in an offhand way the shape of the country and the physical features concerned. It is better to sketch a map ten times in twenty minutes than to spend twenty minutes on one copy. The maps should not be slovenly, but time should not be wasted over them. A detailed and precise map may be allowed once in a while, just as a sort of flourish when all the study is over, but the flourish should not become a constant habit. The teacher gets a much better idea of a pupil's hold upon map drawing from a few of his sketches than from one of his masterpieces.

Type Studies. A type study is a detailed study of a great geographical fact. Such facts are deserts, trade centers, river systems, etc. A great saving of time and clearness

of understanding results from such a study. For if, as McMurry shows, a study of the great basin of Utah and Nevada as a type of desert is made, the children learn a desert very clearly; and when the Sahara Desert, the Desert of Gobi, or the Australian Desert is studied, less time has to be spent upon each, because the children already know pretty well what a desert is.

In handling type studies, the important points are to decide what shall be the type studies for the year in each class, and to collect all maps, descriptions, pictures, and easy reading material upon these types. One may, however, select the types for study after he finds out those upon which most material is available. But in each case, every effort should be made to make the study as concrete as possible.

This concreteness may be secured at the expense of breadth of ground covered; for it pays better to cover a little and do it well, than to hurry over it all and make none of it clear. I should be better satisfied to leave out half the material in a geography text if I were sure that, as a result, what was studied was well learned.

Summary. Concrete ideas of world geography may be built up in imagination by careful attention to the content of pupils' minds, by the use of pictures and maps, and by a leisurely passage through the subject, taking time enough to have the pupils see vividly and understand clearly as they go along. For this work, type studies are useful because they enable the teacher to go into detail here and there.

Rational Geography. In studying that kind of geography which seeks to explain why things are where they are, we make use of *deduction*.

In the chapter on grammar we showed how definitions and rules are, or may be, built up by the inductive process through an examination of particular cases. The same method may be used to build up principles in geography,

such as definitions of geographical terms and the establishment of geographical principles. The terms, *cape*, *bay*, *island*, or *desert* belong to the first; the relation of climate to altitude, to latitude, and to the proximity of large bodies of water are examples of the latter.

However these principles may be learned, they are of use as soon as we begin answering the question Why? Suppose I ask why Winnipeg is so much colder than Vancouver in winter, or Minneapolis than Seattle. We have to go back to a number of principles to answer the question. One principle would be that the farther from the equator one goes, the colder grows the temperature. But since Minneapolis and Seattle are on the same parallel, they ought by this principle to have the same temperature. However, there is another principle to the effect that the proximity of a large body of water tends to keep the temperature higher in winter and lower in summer. This principle gives the clue to the answer to the question.

In all explanation in geography by deduction, there are just three factors that enter in: (1) There is a particular fact to be explained, or discovered; (2) there are some general principles of geography; and (3) these have to be brought together by what is called *inference*. In induction there were three steps: the examination of particulars, the comparison, and the statement of the generalization. In deduction we begin with the generalization. We do not need to discover the generalization — we have it; and by inference we connect it with particular cases. In the illustration just above, we start with a number of general principles about climate; and we have, also, the particular climates of Minneapolis and Seattle. Our business in deduction here is to find which of our stock of principles of climate fit these particular cases. This selection, or finding, is called inference.

So, also, I may have to hunt for some particular cases because they are not given to begin with. For instance, I may be an invalid whom the doctor advises to go to a region of rare atmosphere and warm days. I do not know of such a place, but I know two or three geographical principles. These are that rare temperature is found at a high altitude, but a high altitude is cold. However, the nearer one approaches to the equator, the warmer it is. So I set out, in imagination, to find a place in the mountains rather far south. I have found the characteristics of this place by inference.

In the upper grades rational geography can be used to excellent advantage. The whole tendency in teaching geography is to take the material as it is found, but the greatest fun comes from setting and solving problems whose solutions involve a knowledge of the principles of geography. Textbooks offer work of this kind, but the teacher should set as his ideal the asking of such questions wherever within the pupils' powers to answer.

Summary. Deduction is a process of thinking by which we apply rules and principles to the explanation or discovery of particular cases in which we are interested. It should be used in geography in the form of what is called rational geography wherever and whenever the teacher thinks the principles are in the possession of the pupils.

Outlines. It is wise to have an outline with which to begin the study of the physiography of a continent. What this outline shall be is a matter of your own judgment. With this point understood, the following is suggested for each continent:

- | | |
|---------------------------|---|
| 1. Countries and capitals | 6. Islands |
| 2. Mountains | 7. Peninsulas and isthmuses |
| 3. Rivers | 8. Lakes and seas |
| 4. Gulfs and bays | 9. Area (in comparison with
other units) |
| 5. Capes | |

In no case should any geographical name be listed under these unless it is of prime historical or commercial importance. Once the lists have been prepared, I am firmly of the opinion that each list should be memorized until the series has become second nature or, as the psychologist would say, until it has become automatic.

Attention should be called to the outline by Branom referred to above, and included in the references at the end of the chapter. In this outline, which can be used for any country, but which is too long for quotation in full, the following are a few of the items: (1) Give the direction of this country from your home city. (2) Give in square miles the approximate area of the United States, and state whether this country is larger, smaller, or approximately the same. (3) Indicate an important highland in this country. (4) Is the prevailing rainfall heavy (above fifty inches), moderate (twenty to fifty inches), light (less than twenty inches)?

The Socialized Recitation. Branom gives a very good description of the use of the socialized recitation in geography where the class works either as a unit or where certain members of the class work together as a unit. It is, of course, customary to let each child study geography by himself, but the children can also work together in groups if the work is properly handled. The idea is to subdivide the work of the class so that certain individuals will feel responsible for certain sections of the problem. When a problem is set, such as: Account for the importance of manufacturing in the New England States — the teacher plans the work with the pupils. Leaders may be selected or lists or topics may be listed on the board and the children allowed to volunteer to take care of one or another of them. Then, when the class recitation occurs each individual or group will have looked up his own ques-

tion or group of questions and will be prepared to answer it. The advantages of this group work lie chiefly in the training that it gives the children in working together. In this sense it becomes training in civics as well as geography. The difficulties are not serious; the teacher must guard against a few children monopolizing the leadership and must be careful to divide and classify things to be taught into two divisions — that work which every child must learn for himself, and that other material upon which a report is sufficient. Therefore, the group work must be introduced with great care and must be thoroughly organized by the teacher before it is undertaken. While the socialized recitation is a very fine method of teaching, it is difficult to administer, and the teacher should turn toward complete socialization of recitations slowly through the use of individual assignments first. From this he can advance to the selection of people to work together on problems, and then finally to the place where the pupils may select their own leaders and handle the problem for themselves through class discussion. Through the socialized recitation the teacher can throw the responsibility of study upon the children. Yet he himself has to be the center of the group while remaining in the background to see that the children are working effectively. It is really easier for the teacher to use the ordinary class recitation methods than to use the socialized recitation, but the advantages that are derived from the fact that the children feel that they are doing the work themselves are so great that the socialized recitation method of conducting classes should be used wherever practicable.

Alternation. It is usually found advisable to teach home geography in the third and fourth grades together. After this the fifth and sixth grades may alternate, and the seventh and eighth grades as well. This is easily possible

in geography, because there is no close logical relationship between the series of topics. There is no reason why Europe should be studied either before or after Asia, since an understanding of one is in no way dependent upon a preliminary knowledge of the other.

REFERENCES FOR CLASS READING

- *BETTS. *Class-Room Methods and Management*, pp. 243-53. (Minimum essentials, following the Iowa report, and a course of study.)
- *BRANOM and BRANOM. *The Teaching of Geography*. (The most complete recent statement upon the topic of geography teaching.)
- CHARTERS. *Methods of Teaching*, pp. 365-72. (Methods of securing realness.)
- DODGE and KERCHWEY. *The Teaching of Geography in Elementary Schools*. (General.)
- HOLTZ. *Principles and Methods of the Teaching of Geography*, pp. 44-70 (illustrations of the use of home geography); pp. 272-89 (correlation with other subjects).
- *KENDALL and MIRICK. *How to Teach the Fundamental Subjects*, pp. 233-38. (Facts to be remembered and type examinations.)
- McMURRY. *Special Method in Geography*, pp. 139-64 (types); pp. 165-97 (course of study).
- *SMITH, E. E. *Teaching Geography by Problems*. (A very complete list of illustrative problems presented in full detail.)

CLASS QUESTIONS

1. Give the geography of corn; i.e., locate the corn belt and account for it in terms of soil and climate.
2. Give the geography of oranges, grapes, the sweet potato, cotton, and the hook worm.
3. Describe your geography of Mexico; i.e., the geography of Mexico which you know, however hazily. How does it compare with that possessed by certain of your friends?
4. Have any two people exactly the same geography? Why?
5. What are the advantages of learning geography lists until they are automatic?
6. What facts about South America should be remembered?
7. What type studies might be made with your state as the example? What with the United States as the country studied?
8. Count the number of pages given to each country of South America in some textbook, and see if these agree with your idea of the relative importance of the country to the United States.

9. Did you ever learn any lists in geography thoroughly? Give some, if you have. Have they ever been of use to you? Enough so to make you have your pupils memorize lists?
10. Set assignment questions for a chapter in geography selected from any book that is convenient.
11. What were the most interesting things in geography for you when you were in the grades?
12. Give a series of steps in describing the geographical history of a mahogany bedstead; of a dozen lemons; of a rubber eraser.
13. Give five instances of the correlation of geography with literature; with drawing; with agriculture.
14. Give five instances of faulty images in the study of geography.

CHAPTER X

HISTORY

1. Subject-Matter

Function. The function that history serves is twofold. It provides a pleasant occupation for a large number of people, who, for a part of their time, or for all of it, study it just because they like to know about what happened in the past. They are very well described by the poet Southey in these words:

My thoughts are with the Dead; with them
I live in long past years;
Their virtues love, their faults condemn,
Partake their hopes and fears.

These people study history for its own sake. To them it makes no difference whether history has any practical use or not. And, of course, if they want to study about the past, they have a perfect right to do so.

History may, however, be studied for its intrinsic value by people who are not very much interested in the past. These students study history to find methods for solving their own problems. For instance, a teacher may not care a great deal about the history of George Washington except as it helps her to get her children to tell the truth. Willie may object to telling the truth because he is afraid of a whipping. History will help by saying, "Here is a story of a great man who had a chance to tell a lie, and this is what *he* did." Or, a boy grows discouraged about securing an education. History again furnishes an example in the story of the early struggles of Abraham Lincoln. Out of school, a sinner is afraid that he has "sinned away his day of grace." But history helps him by furnishing the story of the thief on the cross.

The foregoing are moral problems. But history aids in handling many other types of situations. Why is the South Democratic in politics? What should be our attitude toward the Philippines? Should the Federal Government of the United States conserve the forest wealth of the nation? History shows causes, precedents, results — provides us with data upon which to work in answering this question. There is hardly a problem or question raised to-day which does not have light thrown upon it from a study of history.

Summary. The function of history is to give us accurate information about the past. It helps us to solve our problems by telling us how other people have solved these same problems when they were confronted with them. We will get the greatest amount of value from history when we make it as real and concrete as we can, when as nearly as possible we can relive the situations in which past peoples met these problems.

Patriotism. It is sometimes said that history develops patriotism. This it does by showing how many men and women in the past, when met by great crises, have, in attempting to solve the problems that confronted their countrymen, given themselves wholly and unselfishly, even sometimes at the cost of their lives. The spectacle of men so acting comes to the present generation as an answer to their questions about sacrificing self to country. Many a man when brought face to face with an issue that permits of an easy path to self-aggrandizement or a difficult path to unselfish devotion to his country, has been influenced by the way in which some dead hero acted in a similar situation. And all citizens, whether brought actually face to face with such a situation or not, when they think what they might do if their country should make such a demand on them, are influenced to act in imagination in favor of their country. Such an attitude we call patriotism.

Ideals. There are three ideals which should be developed

in connection with the teaching of history. The first is that of *broad-mindedness*. In studying the problems that have confronted the people of the past, particularly the people of our own nation, and the controversies between our nation and others, the pupils should develop the point of view that there are always two sides to every question and that the actions of our ancestors were not always absolutely right while their opponents were absolutely wrong. The children in the North in the controversy over States' rights at the time of the Civil War should see that the people of the South were not villains and traitors, but that they were fighting for what they considered to be the right. Also, the children of the South should see that in the same controversy the people of the North won not merely because they had more money but because there was something in their point of view. The greatest defect in teaching the history of a country is the tendency to develop only one side of a question. The second ideal arises from this, and may be called a rational love of country. Blind and irrational love of country is dangerous. We despise the carping critic. When criticism is offered it should be constructive criticism and the whole force of the nation, stimulated by love of country, should be turned toward the improvement of what we believe to be a wonderful country in which to live. The pupil should feel that his country tries to do what is right and in the main has succeeded in improving conditions and making it a better place in which to live. The third ideal is that of developing an accurate memory for important and significant facts concerning the past, and this should be brought clearly to the attention of the pupil. He should make it his duty not merely to read the history of his country but to remember it so well that he can tell its stories with great detail and quote his facts with accuracy.

The Teacher's Objectives. There are three important objectives to be sought by the teacher in teaching history. (1) It is the duty of the teacher to see that children love the history of the United States. The pupils should approach it with pleasure, to the point where they read history for recreation. (2) When children have covered the course in history they should have memorized in greater or less detail the facts about important people, dates, and events. (3) In the upper grades and in the lower to as great an extent as possible, the teacher should see that the children use their reason and judgment. The approach should be through the problem method. This means that the children should not merely memorize the facts of history; rather they should see history as the record of a series of problems which confronted people in each age and upon the solution of which a reasonable amount of judgment and thought were expended. "Christopher Columbus discovered America in 1492" is a fact, but a problem lies behind it — How could the people of Europe in the latter half of the fifteenth century bring the luxuries of India to their homes without having to pay toll to the Turks? From the point of view of the problem we get not only the fact that Columbus discovered America but we gather together a number of interesting attempts to solve this problem, one of which was Columbus' solution to the problem — that to go to the East we should start toward the West.

The Course of Study. The Committee of Eight published in 1909 a widely read report dealing with history in the elementary grades. Their outline runs as follows:

First grade. Indian life. Stories connected with Thanksgiving Day and Washington's Birthday. Stories connected with local events.

Second grade. Indian life. Thanksgiving Day. Washington's Birthday. Local events. Memorial Day.

Third grade. Heroes of other times: Joseph, Moses, David, Ulysses, and so on to Columbus. The Indians. Independence Day.

Fourth grade. Historical scenes and persons in American history, colonial period.

Fifth grade. Historical scenes and persons in American history continued. Great industries of the present.

Sixth grade. European background of American history. Selected topics from Greek, Roman, and European history to the end of Raleigh's colonial enterprises in America.

Seventh grade. American history to the close of the Revolution. European background continued.

Eighth grade. American history since the Revolution. Great events in European history.

C. A. McMurry in his *Special Method in History* works out the following courses of study:

Grade III. Christmas and Thanksgiving celebrations. Washington's Birthday, local history, Indian life and relics, the different nationalities in the community, and where they came from.

Grade IV. Discoveries and explorers: Pioneers of the local state, Henry Hudson, the earliest Dutch settlers, Champlain, the Five Nations, La Salle; with some optional topics.

Grade V. European explorers in America, and Western stories; European history: Spanish and Portuguese stories, stories of England and Scotland.

Grade VI. European history, including Persian Wars, Darius and Xerxes, the battle of Salamis, the Punic Wars, the Scipios; Colonial history in America, including Virginia, New York, Pennsylvania, and Massachusetts.

Grade VII. The Reformation in Germany and Europe, the Puritan revolution in England, Louis XIV and the French monarchy; American history, including the period from the beginning of the Revolution to the ratification of the Constitution.

Grade VIII. European history (a few selected topics); American history from the ratification of the Constitution to the present time.

While the Committee of Eight has presented the material in the form which is given above, many experiments are being carried on at the present time to discover other methods of organizing history. Through all these studies an attempt is being made to find out which are the most

important problems of the present day upon which history can throw light. It is found, for instance, in the newspapers that the greatest amount of space is given to taxation, foreign relations, suffrage, monopoly in legislation, public service commissions, liquor and prohibition. If we use material so derived as a basis for our course of study of history in the upper grades and in the high school it is apparent that we shall take the problem of taxation, for instance, and carry it through from the beginning of American history to see how it has been handled by people at different periods.

Some of these studies are very interesting; for instance, Horn of the University of Iowa uses the history of medicine or the story of the improvement of health conditions and the use of medicines as a basis for one part of the history course. He raises such problems as the following: What are some of the things that have made us realize the importance of understanding how our health and the health of others may improve? This leads to the study of the rejections from the Army and Navy, of the present death-rate and loss to production through illness. Then he proceeds to consider the lines along which progress has been made. The following are a few of the problems set for the children. Why is there so much less use of superstitious practices now than formerly in treating illness? What improvements have been made in the methods of discovering the causes of diseases and the means of cure? What are the communicable diseases about which we have learned the most? What have we learned about them? What improvements have been made in the training of physicians and nurses? To what extent is attention paid to sanitation, bad health conditions, etc.?

It must be recognized, of course, that in the last analysis inexperienced teachers must depend primarily upon the

textbook, but it is very interesting to them to know that many people are getting together material which will appear in textbooks for their use. Just as in spelling, for instance, the investigators have been trying to find exactly the right words to teach the children, so in history studies are being made to make new textbooks available for the use of teachers.

A word should be said about the place of biography in history. In the third, fourth, and fifth grades children are interested in little else but biography, but in the sixth, seventh, and eighth grades they are old enough to understand the development of the political organization of their nation. The biographical element should never be lost sight of in the grades, however. The reason for this lies partly in the fact that children like biography, but a more important reason is that facts and principles can be carried best in stories. Thus any one will recognize that the sermon whose points are illustrated with stories is better understood than one without stories. The Master Teacher's success as a teacher was partly due to the fact that he always illustrated his principles with parables. Many thousand volumes of the most scholarly kind have been written to explain what He meant, but His own simple illustrations in four short gospels have made more people better understand what He wanted to teach than all these thousands of difficult explanations have been able to do. So, in history, the facts and lessons contained therein are best understood and remain the longest in memory when they are associated with the lives that lived them.

Continuity in History. In any field of history, such as American history, the people have had some problems that have been with them constantly. For instance, one problem that has confronted the American people is that of organizing the separate states with their different interests

and pasts into one united country. In Colonial history we study each State to see how each one grew up independent from the others, with its own government, laws, and ideals. In this period, while they were separate, they attempted from time to time to unite, whenever they were confronted by big problems, such as opposing the concerted attacks of Indians or the encroachment of the French. They met from time to time and framed plans of union, such as Franklin's. In the Revolutionary period we see how they did get together to withstand England, and how, after the war was over, they tried for a number of years to frame a constitution that would give the States as much independence as they could keep while at the same time forming a real union. Then, after the Revolutionary period, we find this question coming up again and again. Finally, at the time of the Civil War an actual rebellion took place, in which some of the States fought to become independent, while others fought to keep the Union intact. Even to-day, the present administration is face to face with the question of whether or not the States shall conserve the forests and national lands, or whether the National Government shall do so; and some writers claim that the differences of opinion are serious enough to split the Democratic Party.

Rational History. This sort of history which seeks to show how a continuous problem runs through the subject, and endeavors to explain it by cause and effect, is called *rational* history. The other sort of history study may be called *factual*, because all it seeks to do is to teach facts. In studying rational history, it is necessary to understand not only that certain facts occurred, but just why they happened as they did. A factual study of the Civil War would deal merely with the facts. It would state that war began in such and such a year, that the Federal leaders took such and such measures, and that the Confederate generals

did thus and so. If the war were studied rationally there would, in addition to this, be an attempt to explain why war was declared, what led the Federals to do this, and the Confederates to do that.

The most important question for teachers in all of this work is the amount of this reasoning from cause to effect that pupils in the grades are able to accomplish. The answer, in brief, as I see it, an answer based on empirical grounds, is this: Children in the seventh and eighth grades can do a great deal of this reasoning if the teacher will help them, but below that grade there is not much use in laying stress upon the connection of events in history.

Rural School History. It is probably not wise for rural schools to attempt to teach history to any extent in separate classes before the seventh grade. American history studied out of the ordinary text should begin there.

This does not mean that history will not be taught below these grades. One cannot help teaching history to children who read widely; for school readers have much historical matter in them. Supplementary readers should be partly historical. Special occasions, as national holidays, have historical settings; and many of the best story-books for children are founded upon historical events.

But in the seventh and eighth grades some attempt should be made to systematize American history. This will lead back at certain points into English history, but no systematic English history should be attempted.

Summary. The course of study should have a strong biographical element. The reading material in all grades should and does contain much historical matter. But systematic history should, in rural schools, begin not before the seventh grade and then consist of American history only. In these grades attempts should be made to teach it rationally.

Standards. When pupils have finished the eighth grade how much history should they know? In answering this

question we must define what we mean by the word "know." One may have a great mass of facts and ideals which are a part of his make-up, which he cannot organize and state, or he may have facts that he remembers definitely. Looking at the question from the first standpoint I should say that the pupil should read as widely as he possibly can — not to remember all but to absorb. On the other hand, the actual facts to be drilled upon need not be many. With reference to the question of what dates should be memorized, Wooters obtained the following by a questionnaire sent to experts in history as the twenty most important to learn: 1492, 1607, 1620, 1765, 1775, 1776, 1781, 1783, 1787, 1789, 1803, 1812, 1820, 1823, 1846, 1850, 1854, 1861, 1863, 1865. To these may be added other dates which would be included in a list of more than twenty and brought up to the year 1924. Dates are merely hooks upon which facts can be hung, or, viewed in another light, they are milestones by which to determine the relative location of events. No list of significant facts to be remembered has been compiled. The teacher has to select these facts for himself. When he has done this he is able to show the children exactly what facts should be known so well that they are not likely to be forgotten.

In history some standard tests have been worked out, and these tests are of two sorts — those which test for facts and those which test for interpretation. The tests are still in the experimental stage, but the teacher can work upon home-made tests for himself, using the methods which have been described in geography and reading. Among the standard tests are such as the following. McCollum has prepared a test in United States history in which he tests a knowledge of dates, men, events, historical terms, political parties, divisions of the United States, and map study. Under dates he says: "The following is a list of

dates, opposite which you should write some great event that happened on that date: 1861, 1789," etc. Under men, he says: "(a) This is a list of men. In just a sentence tell who each was or what great thing he did: (b) Number the men in chronological order: John Burgoyne, Alexander Hamilton, Jefferson Davis," etc.

Starch uses the completion test as "... discovered America in 1492." "John Cabot exploring for the in 1497 . . . landed on the . . . coast and claimed the country for" "New Hampshire was founded in"

The recognition test is used by Davis as follows: "The Mayflower was a hotel, plant, queen, ship." "Miles Standish led in fighting the Dutch, Indians, Puritans, Swedes."

The foregoing scales or tests deal with facts. The Pressey tests in historical judgment seek to test the pupil's ability to read historical material intelligently, to determine his knowledge of time-sequence, to estimate the importance of events, and to see cause-and-effect relationships.

The teacher can develop home-made tests by using the devices found in these tests and those in other fields. The completion test, the recognition test, the true-false test, and other devices give variety to testing which is greatly appreciated by the children and saves the time of the teacher in grading papers.

2. Interest

Immediate Interest. There is no such thing as immediate interest in history in the grades. If there were, the pupils would read any historical story with interest. There are only certain kinds of facts in which they are interested.

Mediate Interest. Children are fond of adventure, of dramatic stories, and of biography with action in it. To make history interesting to children, it has to feed these

interests. To make children like history, it has to be the kind they like. This is the case of the problem of getting interest.

One thing in which children are interested is special days, and these may be made a fine basis for much reading. Thanksgiving Day easily becomes the center of extensive work in Colonial history.

Local characters are frequently interesting because they are local. Daniel Boone can be made interesting to all children, but particularly to the children of Boone and Callaway Counties, Missouri, because some of his descendants live in these counties at this day. Then, too, stories of pioneers and the olden days in any locality have a fascination for children which will, in the higher grades, make them seek interviews and write stories for the rest of the class to hear. In fact, so strong is this, that in some country schools clever teachers with a love of history have organized little historical societies with the children as members, and these have collected relics of bygone days, such as books, candlesticks, guns, knives, and so forth, and have furnished a small museum in the school or in some other public place. But chief of all, the result has been that they have thereby developed a love of the past and a cherishing regard for the monuments that exist in the communities in which they live.

If I were an historian and wanted to write a text on American history which would make the children love the subject, I should make it one thousand pages long instead of three hundred. Instead of packing it with facts, I should select just a few great movements and events, and I should write all the interesting stories centering about them that I could find. Our histories are too small. For instance, an elementary history in front of me has three hundred and fifty pages. The children spend nine

months on this, which is at the rate of two pages a day. And all the material on these pages is packed and condensed till there is no fun left in it. The teacher who uses such a book should see that there are at hand for outside reading some other histories and, if possible, historical novels, which can be understood by the children; source books prepared especially for young students; and supplementary readers. To make history interesting it must not be concentrated history. There must be plenty of interesting detail. Condensed history is like hard-tack. It is probably nourishing, but very hard to masticate.

Summary. The secret of getting children interested in history is to make it biographical; center it around the interests of the children; and, particularly, put in plenty of stories and anecdotes that fill it in and give it body without making it more complicated. A teacher with a thin history book must supplement the text by outside readings of a simple sort.

Correlation. Any one who has read the foregoing pages will see that history is easily correlated with many other subjects. These may be summarized briefly.

History works well with drawing, because the latter can be used as an illustrative medium. Many events can be portrayed; and a boy ought always, if he has gotten the content of what he writes, be allowed some little time for embellishment by pictures.

History and reading are also closely related, because, since one needs to read in order to master history, he can get practice in reading by reading history. If the basic reader in a school does not have plenty of historical material in it, a few historical supplementary readers should be purchased for the children.

Literature is correlated with history in two ways. Poems and speeches can be used to clarify historical events and make them interesting. The poetry that was written

at the time of the Civil War and just prior to it, makes clear the intensity of the feelings during that national crisis. History also clarifies poetry. Without the historical setting of the "Star-Spangled Banner," that song loses half its value.

Geography, in particular, is correlated with history. Climate and physiography play such a tremendous part in all the affairs of men that they must, of course, leave their influence in a marked degree upon history. Climate affects health and bodily vigor. Climate, together with soil, as we said before, made the Southern people slaveholders. The mineral production of California made history. Streams of water with force and fall turn machinery and determine a nation's characteristics. Waterways facilitate communication and promote unity. Mountains affect intercommunication and tend to produce isolation. Mountains, too, promote freedom and love of independence.

Military campaigns are based upon geography. Here is a pass, there a point that commands highways of communication. These are strategic points which have to be taken, and history is made around them.

To make some of these connections between history and geography is one of the interesting tasks of *rational* history. The geographical explanation of historical facts is fascinating whenever it is followed with perseverance.

3. Methods of Study

Problems. The most important point in teaching systematic history in the seventh and eighth grades is that each event in history is due to some defect in what has been done previously. When this deficiency is felt, a problem arises, and some events are carried through by the nation to solve this problem. Then, in return, this solution has certain results which often in their turn have defects in

them and lead to new events which would seek to correct these defects. This statement can best be made clear by an illustration taken from an elementary school textbook in history.¹ On pages 275-277 occur the following sections:

261. The first steam railways. In 1807 Fulton had proved that boats could be propelled by steam. Later it was asked whether "steam wagons" were possible, for use on land. George Stephenson, an English engineer, said that they surely were possible, and in 1825 he demonstrated this by opening the first steam railway in England. A year later, John Stevens built the first steam locomotive in America, and operated it on a little experimental railway at Hoboken, New Jersey. But for three or four years little more was heard of this new invention.

Between 1828 and 1830 the Baltimore and Ohio Railway, which had wooden rails with a flat strip of iron on top, was built for a distance of sixty miles out of Baltimore; its destination was the Ohio River. At first the cars were drawn by horses, although unsuccessful experiments had been made with sails. In August, 1830, a small engine, called "Tom Thumb," built by Peter Cooper, of New York, made its first trip over thirteen miles of this road. The "Tom Thumb" could follow sharp curves and climb steep grades, whereas the English railways were quite straight and almost level; and it could go much faster than any of the English-built engines. It was, therefore, better adapted to the conditions that existed in this country. Progress had been slow, but it had been sure; and inventors were much encouraged over it. By the end of 1831 several American railways, which before this had been using horses, were experimenting with steam locomotives. . . .

262. The crudeness of early railways. In the early years of the railways, however, their methods and equipment were very crude, compared with what we are used to. For instance, it was not at first thought to be possible to cross the Alleghany Mountains with steam locomotives. For a long time "portage" cars were hauled up or let down over the steepest parts by stationary engines. This system lasted until about ten years before the Civil War. The passenger who in those days wished to go farther west than Pittsburgh, must, as in the time of the National Road, proceed by steamboat down the Ohio River.

¹ *A History of the United States, for Grammar Schools*, by Reuben G. Thwaites and C. N. Kendall. Revised and Enlarged Edition, 1924. Houghton Mifflin Company.

HISTORY

For many years nearly every little stretch of railroad was built and owned by a separate company. The rules and gauges — that is, the distances between the rails — of these various lines often differed greatly from one another, and there had to be frequent transfers of "through" passengers and freight. But little by little the "roads of steel" were combined into the great "systems" that now cross our entire continent in every direction, and give us what is on the whole the best railroad service in the world.

Turning over to pages 415–420 we find the following:

369. Development of the country, 1861–1877. In spite of the loss and suffering caused by the Civil War, the United States kept on growing during the Administrations of Lincoln, Johnson, and Grant. Population increased as follows:

1860	31,443,321
1870	38,558,871
1880	50,155,783

There was an increase in wealth, too; and the progress in communication and inventions improved the opportunity in life for every one. In particular (1) a great mineral empire was developed in the West; (2) the Union Pacific Railroad was built across the Western Plains to the Pacific Ocean; (3) a new generous policy was adopted, of giving free farms or homesteads to citizens who wanted them; (4) many factories were established, and their employees became a new industrial class; (5) there was a new interest in education; and (6) the United States in 1876 celebrated the one hundredth anniversary of independence. Each of these requires separate treatment.

370. The mineral empire. When gold was found in California in 1848 (see par. 291), the rush of miners was so great that a new State was formed and admitted in a few months. Many of the gold-seekers, unsuccessful in California, kept on hoping to find wealth somewhere in the mountains; and some of them, in 1858, discovered it just east of California, in what was Utah Territory, and also in Kansas Territory, a little northeast of Pike's Peak. This country, extending from Kansas to California, was called the Great American Desert, and was believed to be too dry and mountainous for use. The new gold discoveries led to the growth of towns and mining camps, and to a demand for more Territories. Colorado, Nevada, and Dakota were created by Congress in 1861. The finding of gold and silver continued, and the area of the "mineral empire" was extended over all the mountain country. Other new Territories followed: Arizona and

Idaho (1863), Montana (1864), and Wyoming (1868). During the Civil War, and the years after it, the mining camps were filled with bustling, speculative life, and the seven young Territories advanced toward statehood. Only Nevada (1864), Nebraska (1867), and Colorado (1876) were admitted during this period; but all the diggings helped to turn American attention to the Far West.

371. First railroad to the Pacific. The Civil War and the mining Territories together made a Pacific Railroad necessary, and possible. The former called attention to the great distance between the States and California, and the slender physical bond that held East and Far West together. There had been an overland stage to California, and the pony express; but now the people demanded a railroad, with its quicker service. The mining camps made this demand more imperative. Their inhabitants wanted mails and protection. Congress made the building of such a railroad possible by giving land and lending money to the Union Pacific and Central Pacific Railroad Companies. It gave them ten sections from the public domain for every mile of track they built, and lent them sixteen thousand dollars worth of Government bonds per mile.

The new transcontinental railroad followed closely the line of the old wagon-road from Council Bluffs, Iowa, to Sacramento, California. It was finished in 1869, at a point near Ogden, Utah, where the two construction parties met, and there, in the presence of many spectators, completed their tracks by the driving of a golden spike.

East and West were now more effectively united than ever before. The most immediate result was to hasten the settlement of the Pacific Coast, and of the broad plains lying to the east of the Rocky Mountains. Pioneers, from the Atlantic Coast, or the Middle West, with their families, farm utensils, and live stock, might now reach the Far West in a week or so, whereas their fathers and grandfathers had taken weeks or months to travel to the Old Northwest or to the cotton country of the Southwest. Tens of thousands of earnest, hard-working men and women now poured into the country beyond the Missouri River, and divided it into farms. Frontier hamlets, such as Omaha, Kansas City, and Denver, grew into flourishing cities with almost the speed of mushrooms. County seats, schools, and churches appeared where only a few years before were Indian camps, villages of prairie dogs, and roving herds of buffalo and antelope. Within a single generation, or about thirty years, a large part of the once-dreaded American Desert was transformed into a land of peace, industry, and plenty.

And further over, on pages 482 and 483, we read:

423. The Panama Canal. Ever since the Spaniards discovered the Isthmus of Panama there has been more or less talk of cutting a canal through it, so that ocean-going vessels might easily pass to and fro between the Atlantic and the Pacific. However, not until 1881 was such a project actually started. In that year a French Panama Canal Company commenced operations; but after eight years they abandoned the task.

For several years nothing further was done about the matter. The United States then made her first move. A few months after Theodore Roosevelt became President (in 1901), our Government signed a canal treaty with Great Britain. It was agreed between the two nations that the United States should dig this canal. When completed, it was to be our property and under our control; but it must be open to "vessels of commerce and of war of all nations . . . on terms of entire equality." Therefore, we bought the rights and property of the French company for \$40,000,000, and are now, as rapidly as possible, completing the canal which they had begun.

Now that this work is finished, merchant and war vessels of the largest size, belonging to every nation of the world, may readily pass from one ocean to the other, and thus save the long and often perilous journey around South America. By this means our eastern and western coasts will be brought much nearer together than before; and the farmers and manufacturers of the great Mississippi Valley may then ship their goods direct to every port on the Pacific.

Remarks. Let us return to our first paragraph and explain it. Prior to the introduction of railroads people were compelled to get along with water transportation, stage, etc., and had done so for generations. Then they began to recognize that this was a very slow method and looked around for a new one. This was their problem — to get more rapid means of transportation. The solution of this problem was found in England where a steam railroad had been constructed. This idea was brought across the Atlantic and tried at Hoboken, New Jersey; and from

Note. The distance across the Isthmus, from ocean to ocean, at the site of the canal, is but forty and one half miles. In 1903 the United States acquired from the Republic of Panama a wide strip of land on either side of the canal, called the Canal Zone, which is governed by a commission appointed by the President.

that point it spread rapidly all over the country. How did this solution work? Certain good results followed as mentioned in the text.

These conditions lasted for a half-century or more and became old conditions, but the people began to see the defects of even railway transportation after a while. It did, to be sure, cheapen transportation, where water carriage was not possible, since it displaced expensive transportation by means of horses. But it was much more expensive than water transportation. So a new problem arose — that of improving the waterways. One attempt at solution is the Panama Canal. There were, at first, several defects in the plan. In the first place, the United States did not own the Isthmus of Panama; England had maritime rights there, and the French had some equity in an old canal. This gave rise to a number of problems which were solved in the following series: (1) A treaty with England satisfied English claims. (2) The United States secured from the Republic of Panama control of the Canal Zone. (3) Thereafter they purchased the French equity in the old canal.

What the results of the Panama Canal, as a means of cheapening transportation, will be, is not yet known, because it has not yet become history; nor do we yet know its defects. That there will be some, giving rise to new problems and new solutions, is certain, unless history fails to repeat itself.

Method of Handling Events. The usual plan of studying an event is to note its cause, describe the event, and list its results. A better method is to handle the event as the solution of a problem, and to have the six following topics under which to discuss it: (1) Old conditions; (2) Defects (giving rise to a problem); (3) Problem (to cure defects); (4) The event (the attempt at a solution); (5) The suc-

cess of the solution; and (6) The defects of the solution itself.

The first selection quoted would then be outlined as follows:

Event: Introduction of Railroads

- (1) *Old conditions* — Water transportation and horse power.
- (2) *Defects* — Slowness and limitations.
- (3) *Problem* — Improvement of transportation.
- (4) *Event* — Introduction of railroad, then used in England.
- (5) *Favorable results* — (depicted in the quotation).
- (6) *Defects* — Greater expense compared with water transportation.

The second quotation may be continued as a part of the foregoing beginning with (3):

Problem — Cheapening of transportation.

Event — Construction of Panama Canal.

1. Treaty with England.
2. Treaty with Panama.
3. Purchase of French equity.

Favorable results — (not yet known).

Defects — (not yet known).

The particular topics selected are not fitted to this scheme in any peculiar way. Any event can be handled in the same manner if desired.

Summary. Events in history are merely solutions of problems. These problems arose because people were dissatisfied with their conditions and tried to improve them. Each event, then, may be studied under the six headings given several times in this section.

Dates. Not many dates should be required of the pupils. The important ones have been mentioned above. In these particular lessons the following dates are given in the quotations:

1826, Introduction of the steam railroad in the United States.

1901, Canal treaty with England.

1903, Treaty with Panama.

The children may be expected to know these dates on

the day of recitation, unless there are too many to learn. This the teacher should decide upon, and advise the children which to remember. Perhaps these can be condensed to two: 1826 and 1903. But in a later review none of these ought to be required of the pupils, because none are of first importance. It is sufficient to remember that railways were introduced early in the nineteenth century, and that the Panama Canal was begun about 1900.

Summary. Only a few important dates should be memorized.

Assignments. Country children have to study their lessons without having much time spent upon the assignment in class. The teacher, crowded for time, cannot read the lessons over with them in class before they study them. But the teacher can help them by giving them assignment problems to study. These may follow the scheme presented above. That is, the children may be expected to study each event under the six headings given above. They may read each topic and look for the old conditions, the defects, what happened, and its success, etc. This makes a very good sort of assignment and has the advantage of being used over and over again, so that the children do not need to have it written out for them each day.

Drill. One particular thing needs to be drilled on in every lesson. That is not dates, but names; for one great reason for the failure to retain history is the failure to remember names. Teachers often allow a child in a recitation to speak of "that fellow back there" or "some man whose name I can't remember," and children often take a sort of pride in confessing this ignorance. It is often a current joke to pretend that they cannot pronounce the names; but if a boy cannot remember a name any further than to say, "that fellow back there," he is going to remember little of what happened. It should, therefore, be expected

of all pupils that they pronounce all important names correctly and without hesitation. A teacher who does not require it is too lax in his requirements. Such a standard set up early in the year and adhered to works rapidly in bringing the children up to the requirements; for if they see that they are expected to master the names they will comply.

Pupils should be required to know important facts in any lesson on the day for which it is assigned. The important facts are those that are closely connected with the problems studied. For instance, they ought to know the causes of the Indian Wars, the main events in them, and the good and bad results, but minor details should not be required of them. They should drill upon these enough to remember them in class. In reviews at the end of a history period, these facts should be in mind. When a review of several periods is to be made, perhaps only the events and their results on the history of the country need be remembered. As the period reviewed becomes longer and longer, the less important facts need not be required of the pupils. When a bird's-eye view of American history is taken, only the great facts should be reviewed. But there are facts that should be drilled upon till they can never be forgotten. What these facts are every teacher must decide for himself, for nobody has worked them out well enough to suit every one.

Summary. The recalling of events to be remembered for all time should be made automatic. The important facts for each day's recitation should be required, but all the facts to be remembered to-day need not be required of the pupils at the end of the year. There is one standard for recitation and another for reviews. Names in particular should be drilled upon till pronounced with correctness and facility.

Realness in History. We have said repeatedly that the more vivid and concrete history is made, the better for both interest and understanding.

Several things, as we saw in geography, assist children in getting clear images of what is not present. For instance, in the transportation quotations, anecdotes showing how long it took people to travel from one place to another, how much it cost, and the difficulties in the way of all travel, will assist in making the children see the vitality of the people's interest in railroads. These stories are not contained in the history lesson quoted and need to be collected, if possible, by the teacher. However, it can be best done by the author, which brings us back to my earlier statement, that the textbooks in history should contain a thousand pages instead of three hundred, and should not, even then, take up so many topics that full treatment may not be given to those selected.

To aid the teacher in getting this material, reference books and historical stories should be placed in the library. Such lists are given in books referred to at the end of the chapter.

Then, too, pictures are an aid to a more vivid description of events. Pictures of forms of early transportation, by stage, by horseback, by wagon, and by steamboat, and of the early railroad trains, all lend interest; and later, pictures of the Panama Canal and an intimate study of its construction.

Maps, too, lend their aid. A map showing transportation routes both by rail and by proposed ocean way, is essential in the topics studied.

Relics, costumes, models, and sand-table representations are other means of getting clearness in these subjects.

Summary. The best way to get vividness in history study is by means of detailed stories and anecdotes which make the situation concrete. Maps, pictures, and other forms of representation assist. The aim is to get the boy to see that history is merely *his-story* — a story into which he can throw himself with dramatic intensity, living over again the scenes as they were once lived by people of the past.

Current Events. It must be continually borne in the mind of the teacher that while history is interesting just to read for its own sake its chief value is found in showing how people in the past have solved the problems which confront us to-day. This being the case, current events, which is a name for problems which we are interested in to-day, are the most important items in history. Therefore, the teacher and the children must be readers of the newspapers in order to relate history to present problems. Most books on history carry events up to ten years ago and do not, and cannot, show how it is related to the problems of the present year. This task has to be performed by the teacher who, in teaching any event in the past, tries to show what it means in American life of the present year.

History Notebooks. Notebooks in the hands of some teachers have done more to kill interest in history than any other single factor. There are some teachers who use history note-writing as their only kind of "busy work" to keep their pupils from getting into mischief. Such action is criminal. If notebooks are used in history, the contents should never consist of more than mere outlines. For if these books are to be used to recall facts, it is evident that the details can be secured from the text, and the outlines are all that need to be remembered.

Some outline notebooks have many good points, such as those in which there are blank maps to be filled in, but not much of the space intended for writing should be used.

Summary. Since notebooks are of use only for remembering important points, notes should be notes, and not treatises.

Written Work. Most of the work done in history should be oral. Some writing is of use in fixing points in memory, but not much should be required, because, like excessive notebook work, it deadens interest. It is better to allow

a boy to devote the time that would otherwise be used in writing too much, to reading widely. For, undoubtedly he absorbs much from reading history books, even if he cannot remember much of it in sufficiently definite form to state in words.

Topical Questions. As in other subjects, so in history questions should as far as practicable be topical. Let me illustrate from the paragraphs quoted upon the Isthmian Canal. The following questions might be asked: (1) Why did the people of the United States want a canal? (2) What was their first move? (3) What did the treatise say? (4) What happened next? (5) What is the Canal Zone?

Here are five questions which might be shortened to two—(1) Why did the United States want to build the Panama Canal? (2) What were the events that happened before everything was finally ready to begin?

A moment's consideration will show that the second two questions will produce much better thinking and will give better ability in talking correctly than will the first five. In the first group the teacher does all the work. In the second two, the pupil does somewhat more nearly his share.

REFERENCES FOR CLASS READING

- BRIGHAM. *Geographic Influences in American History*, pp. 200-09. (Relation of history of Civil War to geography.)
- FREEMAN. *The Psychology of the Common Branches*, pp. 132-60. (Psychology of history.)
- JOHNSON. *Teaching of History*, pp. 154-55 (Committee of Eight) pp. 202-68 (making history real).
- *KENDALL and MIRICK. *How to Teach the Fundamental Subjects*, pp. 253-65. (General suggestions.)
- *TRYON. *The Teaching of History in Junior and Senior High Schools*. (A textbook of use for the teachers of seventh- and eighth-grade history which also contains several of the standard tests.)
- WILSON. *The Motivation of School Work*, pp. 101-32. (Making history interesting.)

CLASS QUESTIONS

1. Select the three most vivid accounts of historical events that you can remember having read or heard. How did the narrators secure this vividness?
2. Name ten modern problems upon which history will throw light. Treat one of these intensively to show what history has to say about it.
3. Take the reading books of the first six grades in a school with which you are familiar, and list the topics in history with which they make the children acquainted.
4. What additional topics in history will they pick up incidentally from reading material at their disposal in the school library? Does this reading give the pupils all they ought to get of history in these grades?
5. Give five recent instances in which facts and principles have been emphasized for you by their being illustrated with stories.
6. Describe any attempts of which you know to teach history as a separate school subject below the seventh grade.
7. What facts in American history should an eighth-grade pupil be expected to remember, if he is not going on to the high school?
8. What local history sources are there in your home community? What people could give such information? Are the stories they have to tell worth recording and keeping? What historic spots are there that need to be preserved? Mention some relics that might be collected. What are you going to do about it?
9. Make a list, from the readers in the school with which you are most familiar, of poems and prose literature (not history selections) that will explain and make more interesting certain events in history.
10. Select five lessons from your history text, and outline them according to the problem solution plan that is proposed in this chapter.
11. What modern problems could you set in connection with each of the foregoing lessons?
12. What magazines and papers other than local papers do you read regularly? Are you proud of the list? If not, what can you do about it?
13. In each of the five lessons above make out a few topical questions.

CHAPTER XI

CIVICS

1. Subject-Matter

The Function of Civics. In no elementary-school subject has the change in content and function been so great within the past ten years as in the subject of Civics. The current textbooks on civics of ten years ago consisted of a description of local, state, and national governmental machinery, and the function of civics teaching at that time was to enable students to get an intelligent view of this machinery. The newer textbooks which have just begun to appear take a much wider view of the function of civics. They are built on the assumption that the function of civics is twofold. First, it should give the pupil an understanding of the problems which he, as a citizen, will have to face. Second, it seeks to teach him how to participate in solving civic and social problems.

The contrast can be very well illustrated by chapter headings of the old and new type of civic textbook. The older type of book had three main divisions into federal, state, and local government, and under federal government the legislative, executive, and judicial functions. This ran on down through the state organization to the city and municipal organizations, with descriptions of the offices, methods of voting, etc. The newer books have titles such as *Problems of American Democracy, Community Life and Civic Problems*, and their chapter headings run somewhat as follows: The Family, The School, The Church, Health, The Police Force, Fire Protection and Prevention,

Irrigation, Civic Beauty, Defectives, Criminals, Problems of Labor and Capital, and include also local, state, and national governments.

Summary. The function of civics as it is now understood is to give the students an understanding of the problems which they will meet as citizens, to present them with the different types of solutions, and to induce them to participate as responsible citizens in the movements of the times to make conditions better.

Ideals. Three ideals are of importance in civic efficiency. (1) The student should develop the ideal of *open-mindedness*. He should appreciate the fact that there are two sides to any question, he should be able to sympathize with the other man's point of view even though he feels that that point of view is wrong, and he should make his own decisions after having looked at the subject in a broad-minded way. (2) *Scholarliness* is important in handling civic problems. The citizen needs to be a master of facts and base his conclusions upon fact rather than upon snap judgments and indefinite and inaccurate information. (3) The ideal of *participation in civic life* must be developed. It is not enough for the citizen to understand the problems and be open-minded. He must go to the polls, join organizations, and throw himself into the actual work of making his community and nation a better place in which to live.

The Teacher's Objectives. (1) The teacher should himself take an interested part in the civic life of the community. (2) He should give the children practice, in school and out, through the socialized recitation, clubs, organizations, etc., in carrying out the ideas which the student believes to be worth while. (3) The teacher should see to it that the pupils have a sound knowledge of the facts which are pertinent to the proper handling of civic problems. (4) He should teach the children to think about these problems

and not to depend upon partisan prejudices and community conditions. The development of the ideal of open-mindedness in the pupils is one of the important objectives of the teacher.

The Content of the Course. The inexperienced teacher must, in the last analysis, follow the adopted textbook rather closely, and at the present time two types of textbooks are commonly used in the school. These are referred to above. There is the old type which deals only with governmental machinery and the new type which takes a broader view of the subject. The content of the newer texts has already been referred to and their richness, in comparison with the old type, is apparent from a reading of the chapter headings that have been quoted.

The type of material taken up in these topics may be illustrated from one of the textbooks in its handling of the chapter on the school. This deals with the methods of learning and contains some discussion of instincts and their control, the importance of youth, the development of the American school, and recent educational progress, methods of controlling the school through taxes and school boards, the problem of school attendance, the reasons why people go to school, the money value of education, and how to get the most out of school.

While I have not made a practice of listing textbooks in connection with methods of teaching as presented in this text, I depart from this practice to mention three of the newer types of books for the information of teachers who have to teach the old type of governmental civics and who may be interested in looking over some of the newer books. These books are selected at random and I mention them without making any reference to the relative importance of any particular book. The three books which I have before me are Burch and Patterson's *Problems of American De-*

mocracy, published by Macmillan, Hill's *Community Life and Civic Problems*, published by Ginn & Co., and Hughes's *Problems of American Democracy*, published by Allyn & Bacon.

Materials for the Course. The teacher of civics does not need to, and should not, depend upon the basic text. There is so much material to be found in books and current magazines and newspapers that no teacher can present valid excuses for not having a very rich course in the subject. The children love to collect information which bears upon the topics under discussion in the school, so that through the combined efforts of teacher and pupils the course can be made very valuable. Nor is the teacher confined to books, for within the community itself there is a great deal of information to be obtained through interviews. The school trustees, the county representative, the county judge, the county officers, the minister, and other leaders in the community have information which they are glad to give to the children when they come to them for material for school use. These interviews are worth while not only because of the information collected but particularly because they help the children to get into the current of community life and begin early to get an adult attitude toward the problems which concern their fathers and mothers.

Problems and Projects. Civics is best taught by the problem method, and projects can be entered into from time to time.

A recent book of great interest to rural school teachers is by Collings, and is entitled *An Experiment with a Project Curriculum*. It contains much that has a vital connection with civics. While this book is of particular significance to teachers of rural schools because it shows how the country school can be organized upon a project basis, it is at the same time suggestive to all teachers whether they

are able to follow up his plans completely or not. A few of the projects selected at random are the following. At a time when a well-known criminal was being tried the students followed this trial through quite carefully in order to see how court machinery works. They studied the League of Nations, which at that time was a current interest, and a community meeting was held under the auspices of the school, at which both sides presented their case. The following list of problems, growing out of the community interests, is very suggestive for teachers in other communities.

1. How our school election is conducted.
2. How our taxes are collected at Pineville.
3. How our road boss is appointed.
4. What our taxes are used for at Pineville.
5. How Mr. Smith cares for the prisoners in the county jail.
6. Why the county Republican Committee believed that they should be elected at a crossroads political meeting.
7. What our county officers do at Pineville.
8. How sick people are cared for in the Pineville hospital.
9. How the MacDonald county bank handles our money.
10. How the people of our community vote at the general November election at the Bethpage polling.

The titles of the foregoing problems will undoubtedly appeal to the readers, as they do to me, because the problems are concrete and practical. They have a kind of interest which is very appealing to children because through them they are introduced into the adult life of the community, which, up to this time, has been mysterious to them and whose study now brings a glow of satisfaction from their feeling that they are practically old enough to get insight into them. Moreover, such problems are not difficult to find. Any alert teacher can select double the number that he is able to handle during the course of the year.

Grading Material. With this larger view of civics accepted, it is apparent that the children can begin to study civics in the very early grades in an incidental way. For

instance, they learn a good deal about governmental machinery in history. They are brought into contact with problems of health through hygiene, which is studied in the lower grades. They pick up a good deal of information about the school. They know much about recreation and have some notion of civic duty. Afterwards the systematic study of civics had best begin in the seventh and eighth grades at a time when the children are beginning to attain the maturity which is necessary for an understanding of the underlying principles and causes which operate in community life and the machinery by which civic life is regulated.

2. Interest

The methods of developing interest in the textbook on civics are the same as those used in other textbook subjects, but in addition to this the teacher who uses the problem method of attacking civics is able to fall back upon a whole set of interests which are not available for some other subjects. This is the interest in the social life of the community. When such problems as those listed above, from Collings, are presented to the children the appeal is immediate. They want to know about these things because they have always wondered about them, and this interest can be maintained at a high level if the teacher is careful not to make the teaching too bookish. By this I do not mean that the children should not read books, magazine articles, newspapers, etc.; I rather mean that as they read them they should keep in mind the fact that they are collecting information for such problems as these. As a matter of fact the problem method of teaching invariably causes the children to read very much more material than they would use if it were assigned to them and to read it with greater interest and more intelligence.

Then, too, the teacher can rely upon interest in making excursions and seeking interviews with the people of the community. The adults are always glad to talk to school children on such problems, and the children feel a great deal of immature importance in visiting a man or woman for the sake of getting information for the school. Furthermore, the children like to be in on the planning of little projects which they are able to carry through. Sometimes they put on campaigns for school betterment, such as a new fence, a better school library, or a phonograph. Such campaigns develop leadership on the one hand and the ability to work in organized groups on the other, for in every group somebody naturally becomes a leader and unsuspected abilities are discovered. Teamwork in organized groups in school is an excellent field for practice which will be useful in adult life. One of the greatest difficulties of the farmer is that he is an individualist and does not take readily to working in organizations. This can be overcome if he is caught young and trained in working with other people.

Summary. Interest in civics is easy to secure for three reasons — first, the children are interested in learning the mysteries of adult civic life; second, excursions and interviews stimulate interest; and, third, projects and campaigns directed toward the improvement of specific conditions are fascinating to children.

3. Methods of Study

Socialized Activities. The teacher who is interested in developing the ideal of participation in civic enterprises can give a great deal of practice to the children in school if he utilizes the possibilities for group organization. Customarily children study their lessons separately and are individually responsible for their work to the teacher. Thirty children in the school are thirty units, each responsible for his own work.

But it has been demonstrated by many teachers that it is possible to have them work in groups. Sometimes this takes the form of a socialized recitation where, first, each individual is responsible for a particular part of the lesson for which the others are not responsible, as in collateral reading. Second, groups of two or three children may work together and report upon a specific part of the assigned lesson. Third, the class as a whole may be organized. Sometimes the teacher appoints a chairman, or has a leader appointed, with committees and subcommittees, and sometimes the teacher becomes the chairman who directs the work while seeking the advice of the children about how best to carry it on. In addition to using the socialized recitation, clubs are organized for one purpose or another. There may be good language clubs, music clubs, health clubs, or any one of a number. From the point of view of civics it is important that one such club, at least, should be developed in each school, where parliamentary law is taught. A chairman, secretary, treasurer, and committees should be appointed, and the meetings should be conducted strictly according to the established rules of law and order. Moreover, the teacher should see that the clubs actually work. This means that they should set up certain objectives and the chairman should see that what they attempt to do is actually accomplished.

It is probably safe to say that while the most important subject in the course of study is reading, civics belongs to the second group, in which also belong music, literature, art, and history. I place very great importance upon civic club work and my reason for doing so is that the handling of social and civic problems in a community through organized activity is extremely important in improving living conditions and in enriching the lives of the people of a community. If we can make an intelligent

community that is working for social betterment all things else will follow.

Textbook Study. In view of the fact that most rural school teachers are still confronted with the problem of teaching the older type of civics, I think it wise to discuss methods of handling such a book, for it is perfectly clear that if the teacher can adopt the problem attitude toward the teaching of civics he will be able to develop a very useful and interesting course for his children. The remainder of the chapter, therefore, will be devoted to the study of methods of using the older type of book.

Governmental Machinery. There are three classes of governmental machinery: local, state, and national. Each of these performs different duties, and a citizen has some participation in each. For instance, he votes for people to represent him in Congress, in the state legislature, and in the local offices. He may also pay taxes to support local, state, and national institutions. In the first two cases, the tax is a direct tax; in the third, the taxes are indirect.

It is not necessary to give the details of the machinery of government here, since they can be found in every textbook on civics. But, as our purpose in this chapter is to deal with problems in the teaching of the subject, we shall lay emphasis upon a few pedagogical points.

National Government. Civics is frequently studied in connection with history, and with good results; for in history we see the growth of the institutions and agencies that govern the nation, and the causes that have made them as they are, and we realize that even though they may not suit every one, they are in the main the best for the whole nation.

However, the machinery of which we get the best view in the study of American history, in the schools, is the

National Government. We see how the constitution was framed, we study its clauses, we get an understanding of the powers and duties of Congress, of the federal judiciary, and of the President. Less attention can be paid to state government and still less to the local government, because the history studied is a national history, and only incidentally a state or local history.

The best place, then, to study national government is in correlation with history, because it shows the development, and growth, and general fairness of the national constitution and laws.

When governmental functions are studied in history, however, care should be taken that the pupils are not left with a purely abstract hold upon them. They should know who the leading officers are, such as their congressman, state senators, the President, etc. They should be acquainted with methods of election, the story of the attempts to pass amendments to the constitution, and such other facts as those interested in voting need to know to exercise intelligent suffrage and citizenship.

Local Government. But it must be acknowledged by everybody that the average citizen is touched much more closely by local government than by state government, and more closely by state government than by national government. And it is here that civics studied merely in relation to history has its great weakness. The government that touches the pupil least is given the most attention, and that which is closest to him is studied least.

Points of Emphasis. Because of this weakness, there should be considerable study of local and state government apart from history. This may seem difficult in an over-crowded program; but, if necessary, one history period a week may be set aside for this purpose. Or, at certain times in the year — for instance, when school, local, and

state elections occur — several history hours may be set aside for the study of civics.

Systematic Study. In such periods a systematic course in civics may be studied. The local officers of the county, village, and school district in which the pupils live may each be examined from day to day and an effort be made to establish a systematic understanding of the whole system. And the same thing may be done for state government.

Civics has, unfortunately, the same difficulty to contend with that any systematic study has. It may not get into close contact with the pupils' lives. When they get through, they may not know what to do in concrete cases with which they are confronted from day to day.

Concrete Problems. So instead of a systematic study, the following plan may be substituted: Begin with some concrete problems that may face the pupils, and study governmental machinery to see how it is handled. A number of illustrations will make this clear, and show how easy the method is in application. The only requirement is that some governmental problems that are interesting to the pupils shall be selected.

School Taxes. A teacher is safe in beginning the study of one branch of government with the school tax. The tax is a sure point of interest, because all know the reluctance with which people, and especially farmers, pay taxes; and their sons and daughters have enough acquaintance with this to make them likewise interested. The school they are well acquainted with, and so the combination of school and taxes is interesting.

No one set of problems is the best. A teacher may make up any list that he prefers. The following is a series that is intended to be merely suggestive and to apply particularly to Missouri. The questions might be:

- (1) How much money did it take to run this school district last year? This necessitates getting the information from the district clerk, and the class thus meets its first official.
- (2) Where does this money come from? This leads to a consideration of the sources. These are:
 - (a) Local levy.
 - (b) State apportionment.
 - (c) County tax.
 - (d) Tuition.
- (3) If (b) is taken up, this question may be asked: How is the apportionment made? This gives a fine opportunity in Missouri to show what happens if a child misses school for a day, and will give, also, a chance to see where the state revenue that is apportioned comes from.
- (4) If (a) is taken up, many questions arise, such as Who determines the levy? What is the limit of levy? Suppose you ran a nine-months school, how much would the levy have to be increased? Or, If you build a new building at a cost of \$800, what might the levy be? How does your present levy compare with the levies in the nearest towns?

These questions lead back to assessed valuation and the study of the assessor as a public officer.

When you pay your taxes, to whom are they paid? This gives an introduction to the collector.

Many other problems of a like sort can easily be arranged by the teacher, and may be pushed as far as desired. Their advantage is that when the pupils have finished such a study, they know many points of government that they will have to deal with every day.

When annual school meetings occur, they should be used by the teacher as the basis for a study of questions of

organization; and eighth-grade pupils should be encouraged to attend such meetings.

Miscellaneous County Officers. A few questions will show the concrete method of approaching the subject of county officers.

- (1) *The Recorder.* If you wanted to buy a piece of land, but were not sure that the title was clear, how would you find out about it? If one wishes to be married, to whom will he go to get a license?
- (2) *The County Court.* Who fixes the county tax levy? If you did some work for the county, to whom would you present your bill? Who looks after the county poor farm? If you wanted to open a new road, to whom would you apply for permission? Then, a study of the method of appointing the county court could be made.
- (3) *Coroner.* If some person were found dead on the road, who would be notified?
- (4) One question may bring in several officers; as, if a man is suspected of murder, who handles the case? These officers would include the *sheriff*, the *prosecuting attorney*, etc.
- (5) *Surveyor.* If you have a dispute with a neighbor about a line fence, what officer can settle it for you?

As said above, these are only a very few suggestive questions. But they illustrate a method that works very well in practice both for local government, as has been illustrated here, and for state government as well. However, if I had forty lessons to spend on civics in a year, I should spend at least thirty on local government, and not more than ten on state government.

Use of Books. Such a course as outlined would not follow any text, but it would need several books easy to secure. One of these would be the adopted textbook. To this

should be added a few other single copies of other texts on civics for the library. Several copies of the school law should be available. (State Statutes are probably too cumbersome for use and too hard in many cases.) With these books available, that teacher who has never tried the plan will be surprised to see the amount eighth-grade boys and girls can dig out of a school law for themselves, if the teacher will show them how to use the index and direct them in their searching. It is, of course, a well-known fact that country pupils can do more for themselves than city pupils. The reason is that they have to, because they are not able to summon the teacher to their assistance whenever they feel that they need help.

How can a List of Problems be secured? The way in which I secured these problems to-day was to take a book on civics, look up all the officers and see what the duties of each were. Then I asked some simple questions that would illustrate how these officers came in contact with the pupils. For instance, I found in the text that "*the recorder of deeds* keeps a record of all deeds, mortgages, and other documents having to do with the title or ownership of property. . . . It is also his duty to issue and keep a record of all marriage licenses." Other questions than those I asked might have been selected, but I selected these as an introduction, chiefly because they are of general interest and are pretty sure to appeal to boys and girls.

The plan of making questions is, therefore, very simple.

REFERENCES FOR CLASS READING

- *BETTS. *School-Room Methods and Management*, pp. 277-89. (Subject-matter.)
- *COLLINGS. *An Experiment with a Project Curriculum*. (This book shows the possibility of reorganizing a typical country school upon the project basis, and contains many excellent suggestions even for those who are not prepared to do this.)

FIELD and NEARING. *Community Civics.* (Simple treatment of rural community problems.)

*HANNIFAN. *The Community Center.* (This book contains some excellent suggestions for teachers to use in organizing clubs in schools and the people of the community for the betterment of community conditions.)

HART. *Educational Resources of Village and Rural Communities.* (Discussion of and bibliographies upon rural community problems.)

HILL. *The Teaching of Civics.* (General treatment with illustrative lessons.)

*KENDALL and MIRICK. *How to Teach the Fundamental Subjects*, pp. 265-88. (Using school activities as a means of civic training.)

**The Social Studies in the Elementary and Secondary School. Part II of the Twenty-Second Yearbook of the National Society for the Study of Education.* (This monograph will be of interest to those who desire to get a compilation of the research studies which have been made upon the content of the curriculum in the social sciences.)

WILKINSON. *Rural School Management*, pp. 332-52. (The school as a social center.)

CLASS QUESTIONS

1. Will such a course in civics as we have outlined give the children a substantial acquaintance with the Constitution of the United States? Give your reasons for your answer.
2. State how you would develop in civics each of the ideals mentioned above.
3. Select a civics textbook and show how you would use your local community institutions and organizations to provide supplementary material.
4. Of what real use can a civics class be to the adults of a community?
5. Make a list of possible civics projects.
6. Criticize and evaluate the socialized recitation.
7. Select all state and local officers and make out questions concerning each office which you think will be interesting to the children and which illustrate the duties of the officers.

CHAPTER XII

ARITHMETIC

1. Subject-Matter

Function. We have seen in each chapter that each subject taught in school has a specific function to perform and one which no other subject can fulfill. In this chapter we shall see that arithmetic is no exception to this rule. For, while geography assists us by taking care of our knowledge of climate and physiography, while spelling looks after the order of letters in words, and while history records and organizes the past for us, arithmetic offers its share of assistance by handling number or quantity for us. Whenever we have to decide questions concerning how many or how much we go to arithmetic.

This, of course, is very important because we do all our buying and selling by quantity. When we build a house we need to know how much material and how many dollars it will take. We use number to arrange the school program for a day, so many minutes for recitation, so many for study, etc. The housewife has to deal with quantities in the kitchen, dining-room, and living-room. Everybody, every day, makes use of arithmetic every hour of the day.

Number has been such a fascinating subject since it was first studied centuries ago that in every age there have been many brilliant men studying it, who have laid down a great body of rules and principles that help to explain and control number.

Until a few years ago all teachers of arithmetic laid great stress upon the use of arithmetic as an excellent means of

training one to think accurately. They claimed that if a child learned to think accurately in arithmetic he would be greatly benefited in his thinking in every other subject and in life. But many recent experiments have shown that while the study of arithmetic may make pupils think more accurately in arithmetic it does not have a very great effect upon their thinking in other fields. For instance, an expert mathematician may be quite illogical in politics or may not think at all clearly when he tries to trade a horse. So it is better for teachers when trying to explain the value of arithmetic to lay but little stress upon this point and to deal only with its intrinsic function.

Summary. The function of arithmetic is to enable people to handle number so that they may do the things they like to do which depend upon knowledge of number for their accomplishment. The indirect functions are not of importance outside of the subject.

Ideals. In the teaching of arithmetic there are three outstanding ideals which need to be developed. (1) The most important of these is accuracy. When people are engaged upon some important problem in which arithmetic is involved, it is often disastrous to make mistakes in computation. (2) But it is found that accuracy runs very closely parallel with speed, which is the second ideal. In general, the rapid computer in arithmetic is the most accurate, when he has developed a natural rate of speed and maintains it, rather than seeking to perform speed stunts. (3) Along with these two fundamental ideals of accuracy and speed, is included the ideal of ability to reason. That is to say, children should seek in performing their arithmetic to think things out rather than to memorize them mechanically.

The Teacher's Objectives. Five objectives may be selected for the teacher to seek to accomplish. (1) The

first of these to be mentioned is to develop a liking for arithmetic. The reason for this is the often repeated one in each chapter. If children do not like arithmetic they will neither learn it nor use it. The second, third, and fourth objectives may be listed together as the development of speed, accuracy, and the ability to reason. The development of these ideals becomes, in arithmetic, very distinctly an objective for the teacher. The fifth objective is the furnishing of practical problems. Arithmetic, as a textbook subject, is of little value in comparison with its use to the pupil in his everyday life. But it has been found that if the teacher teaches only the textbook problems the children have great difficulty in seeing how those problems apply in their practical out-of-school life. So, because they face this difficulty, it is necessary for the teacher to collect from every source that he can, the actual problems that are used by children and their fathers and mothers in ordinary life outside of school.

The Course of Study. There has been a great deal of discussion for many years about what should be included in the course of study in arithmetic. Continuous criticism is made of the textbooks on the grounds that many processes no longer used by people are included, through the influence of tradition, and that the problems used as exercises are not real problems.

To determine just what arithmetic is needed in order to handle practical affairs is difficult, but several attempts have been made. The most thorough of these attempts has been that of G. M. Wilson, who collected nearly fifteen thousand problems from about four thousand people who were parents of sixth-, seventh-, and eighth-grade children in country, small town, and city schools. He classified these problems and found that nearly ten thousand problems involved buying, fifteen hundred selling, and fifteen

hundred involved money where there was neither buying nor selling. The problems involving money took in eighty-three per cent of all the problems. He found by another classification that the problems on labor and wages constituted forty-five per cent of all the problems, interest eleven per cent, rent six per cent, insurance four per cent. Then he studied the arithmetical processes needed in handling each problem and discovered roughly that for sixty-nine cases of multiplication there were forty-four of addition, twenty-eight of subtraction, twenty-four of division, twenty of fractions, twelve of accounts, and four of percentage. A number of conclusions were drawn from the study which will not be given here except to indicate some of the things which these people did not use at all. The omitted items include the Greatest Common Denominator and the Least Common Multiple; long confusing problems in common fractions; complex and compound fractions; reduction of denominative numbers; longitude and time; cases two and three in percentage; compound interest; exchange; true discount; most of mensuration; cube root, and the metric system.

These conclusions are not general. They are merely based upon the arithmetic needed in the fifteen thousand problems which he collected, but they are of value to the teacher in giving some idea of the items in the textbook for which the ordinary child will probably not have very much use. If the child goes on to high school the situation is somewhat different. The material is presented merely as a matter of interest without recommendation on my part.

Thorndike has summarized the knowledge which he believes children should possess as follows: (1) A working knowledge of the meanings of numbers. (2) A working knowledge of the system of decimal notation. (3) A

working knowledge of the meanings of addition, subtraction, multiplication, and division. (4) A working knowledge of the nature and relations of certain common measures. (5) Working ability to add, subtract, multiply, divide, with integers, common and decimal fractions, and denominative numbers, all being real, positive numbers. (6) Working knowledge of words, symbols, diagrams, and the like as required by life's simplest arithmetical demands or by economical preparation therefor. (7) The ability to apply all {the above, including the ability to solve problems concerning the areas of rectangles, volume of rectangular solids, percentage, interest, and certain other common occurrences in household, factory, and business life.

Summary. The course of study in arithmetic should be confined to the arithmetical processes which are necessary skillfully to work out life's common arithmetical calculations.

When to Teach Arithmetic. There is a growing tendency to delay the teaching of arithmetic as a separate subject. Systematic arithmetic is so difficult for little children that if they are allowed to wait until they are more mature they will learn it more rapidly and understand it better. The time that is ordinarily devoted to arithmetic in the first grade can be better spent upon handicrafts work, in playing games, and in reading. Indeed, while they are doing these things they are picking up incidentally and naturally a good deal of arithmetic which, because it is learned naturally, is understood by them.

All schools used to start systematic arithmetic in the first grade. More recently many schools leave it to the second grade and a few do not begin it until the third grade. Some authorities advise postponing it until the fourth grade. In my opinion, arithmetic can be safely left until the fourth grade when textbooks are prepared with the intention of teaching it from that point on through the eighth grade.

Difficulties. Any consideration of the course of study in arithmetic must take into account the difficulty of performing arithmetical operations. It is perfectly clear that not all parts of arithmetic are equally difficult. For instance, in addition it is much easier to learn $5 + 5$ than $8 + 5$. As a matter of fact, it has been discovered that the most difficult addition combinations to learn are those in the center of the table, as $7 + 5$, $7 + 4$, $8 + 5$, $8 + 3$, $9 + 5$, etc. It has been demonstrated that pupils who can add $8 + 5$ sometimes have difficulty in adding $5 + 8$.

A great deal of work has been done in studying the relative difficulty of arithmetical facts. It has been discovered that most errors belong to recurring types. For example, sixty per cent of the errors made by eighth-grade pupils in working tests on addition of fractions were due to the addition of the numerators for a new numerator and also the adding of the denominators for the new denominator, as, for example, $3/5 + 1/5 = 4/10$. It is apparent from the foregoing facts that efficient teachers of arithmetic must diagnose with definiteness the difficulties of their pupils if they are going to develop efficiency without waste. When children make mistakes the first duty of the teacher is to find out the cause and seek to cure it rather than merely to mark the exercise wrong and ask that it be done over. This is particularly true because many children have individual difficulties of their own which other pupils do not possess. This diagnosis can be made through standard tests which will be mentioned later, but it can also be made in connection with the ordinary exercises which are given for practice. If children are given a test in fractions the teacher should pay more attention to the mistakes than to the correct results. A short study of the mistakes will be very illuminating to the teacher and will naturally show him what to do in order to make the

work efficient. When, for instance, the teacher has seen that some of his pupils add the numerators for the new numerator and the denominators for the new denominator in fractions, he has a very specific difficulty to cure. He has to invent some method of showing the students exactly how addition of fractions is carried on. He will see also that his teaching up to date has not been particularly effective in that particular respect.

Standard Tests. Two types of standard tests in arithmetic have been worked out for teachers — tests of reasoning and tests of ability to use the fundamental operations. Tests of reasoning have been made by Stone, by Curtis, by Monroe, and by others. Tests upon the fundamental operations have been made by Curtis, Woody, and others. Of these the ones which are most widely used are the Curtis and Monroe tests. A description of the tests will be found in the Monroe reference at the end of the chapter, in *Measuring the Results of Teaching*.

Ability on the part of the pupils to use the fundamental operations is not a complete test of the teacher's ability to teach arithmetic, nor does ability to perform these operations guarantee skill in reasoning. But it cannot be denied that inability to add, subtract, multiply, and divide with skill will permanently handicap a student in efforts to work problems involving other operations. Viewed from this angle, skill in performing the fundamental operations is very important.

2. Interest

Immediate Interest. As in the other subjects treated, so in arithmetic there are pupils who enjoy the work for its own sake and who derive pleasure from working arithmetic problems. From the studies that have been made it is quite interesting to note the number of pupils who prefer

arithmetic to any other subject. For instance, in a comparison of arithmetic and history, 327 liked arithmetic greatly while 96 greatly disliked it, as against 164 who liked history greatly and 113 who greatly disliked it. To such pupils the subject is said to have immediate interest.

In order to intensify children's liking for arithmetic it is important that the work should be gone over carefully and slowly. It should be simple enough to keep the pupils from growing discouraged and sufficient drive should be put into the teaching to have the children see that they are making actual improvement.

Specific Function. Both for the pupils who do not like arithmetic and for those who do it is important that they be introduced to it through its use, and that once introduced the idea of usefulness in practical life be kept constantly before them. It is normally introduced in the early grades in connection with plays, games, and handicrafts, where a knowledge of arithmetic is necessary in the carrying out of activities of one sort and another. Its usefulness is developed in application to all sorts of practical problems which are collected by the teacher from the textbook and other sources.

Handicrafts. Boys who like to work with tools find that they cannot get very far in making things without measuring and computing. Primary children in paper cutting and all forms of handwork also need to count and measure. Cases of the use of multiplication, division, addition and subtraction, and even fractions, arise in the course of a year in the lower grades and somewhat more complicated processes occur in the upper grades.

When such operations occur in work which is enjoyed by the pupils they perform them with interest and sometimes without even thinking or knowing that they are using arithmetic. It frequently happens in the higher

grades that boys who have never liked arithmetic begin to take an interest in it and show marked proficiency when they have found it of use at some time in manual training or agriculture.

Games. It is a well-known fact that such a game as dominoes gives pupils marked ability in addition and subtraction. This game played with little cards which have the domino marks on them may safely be played by two children in school on the top of a table or desk unless certain benighted parents object too strenuously. Other simple games such as "odd or even," "hully gully handful," "bean bag," and "ring toss," come quickly to mind as games that are played during school hours in many schools. To these may be added a number of games that are played out of school, games which the teacher may teach the children with the idea in the back of his head that they will get training in arithmetic. These include crokinole, flinch, marbles, numerical modifications of "Simon Says Thumbs Up" and so on. Such games have, of course, many other values in education, but we discuss them here only in relation to arithmetic. A selected list of number games is appended in the references at the end of the chapter.

Practical Problems. Interest attaches itself to arithmetic when problems taken from the life of the pupils at home are chosen. Agriculture in the country offers hundreds of these problems for rural schools. Measuring land, stacks of hay, and bins of wheat, estimating the cost of lumber for a barn, the percentage of gain in crops due to spraying, the rations for cattle and horses, and the profits in wheat raising are a few examples which show the richness of this source of interest.

Children may be asked to collect such problems from their parents as Wilson did in collecting the fifteen thousand

arithmetic problems mentioned before. In collecting these problems the grammar-grade children may be asked to have their fathers and mothers keep mental track of questions in arithmetic that may come up and the children will write them down to bring to school. Arithmetic texts are including more and more of these practical problems every year, but the alert teacher does not need to depend upon the texts. He can make up problems for himself, and he ought to do so if he wishes his work to be efficient.

The use of such problems will undermine the criticism of business men and others that when children get through school they may know some arithmetic but they are unable to use it in ordinary, practical life situations.

Other Sources. Thorndike shows that through the interest in physical action arithmetic may be taught by having the children march in files of two, three, four, and so on; by raising the arms once, twice, etc.; by showing a foot and yard and inch with the hands; by making pictures of fractional parts; by cutting strips of paper; by folding paper, and so on. He also mentions the use of tricks and magic as an occasional source of interest. For instance, children may dictate to the teacher three numbers for addition, such as 357, 682, and 793. These the teacher will place on the board and to them add 642, 317, and 206. Then the teacher can immediately say to the children "The sum of these six numbers is 2997." This will make the children think that the teacher is a wizard, but as a matter of fact he is not, for if you will notice the first term of the first number in each of the two sets — 357-642 — you will see that their sum is 999. So for the other two pairs, and all the teacher has to do is multiply 999 by three in order to get 2997. Or he can do it much more quickly by saying that the sum of the numbers is 3000 minus three.

When I taught in the country school I used a similar device where I gave the children five or more figures to add. If I had used only three the children might have found out the trick. Let us take, for example, 812, 743, 315, 188, and 257. I knew at once that the sum of these was 2315. It will be noticed that it corresponds to the third number with a two in front of it. The trick is very simple. The idea is to put down three numbers selected at random and then below two more, such that, in this case, the first and fourth numbers equal 1000, and the second and fifth also equal 1000. This plan saves the teacher a great deal of work in addition and during the two years that I used it the children did not discover the trick.

Summary. Immediate interest in arithmetic may be present. If not, an appeal can be made to other interests and particularly through the intrinsic function of arithmetic in its use in hand-crafts, plays and games, and practical problems, all administered in such a way as to give arithmetical practice and intelligence.

Records of Improvement. The children's knowledge of previous performance is a powerful factor in contributing to their improvement in arithmetic. When children see that they can do arithmetic more rapidly and more accurately to-day than they could a week ago, they are given a strong stimulus for additional work. In this respect they are following the natural laws of the human mind. Every person has a tendency to become interested in the thing in which he sees he is becoming more and more efficient.

To help the children to see that they are improving, the teacher needs to use tests. The standard tests may be used, but even where they are not used the teacher may make up tests which are not too difficult and give them at intervals of a week or so, or the same test may be repeated at intervals so far apart that the children will not remember it. In such a case the comparison is not absolutely scientific,

but it is sufficiently accurate to be justified for practical purposes. In all such tests the children should be examined for both speed and accuracy. It is highly desirable that the teacher should use the standard tests as a part of his equipment, and obviously when the tests, either standard or home-made, are given, the children's progress should be recorded and the records made accessible to them.

Projects. Arithmetic is concerned with projects in three ways. (1) It may be used in other projects which involve quantity. In such a case we do not have an arithmetic project; we use arithmetic in connection with projects. (2) Improvement in arithmetic may be made a project. That is to say, the problem of increasing their skill in the handling of the fundamental operations, fractions, etc., is put up to the children. They talk this over with the teacher, discuss directions, keep records, study the improvement, and lack of improvement, devise new methods of study, allow themselves to be tested again, and so on. (3) There are a number of projects in arithmetic given in *Projects for the Elementary Grades*, by C. H. Elliot and Chas. S. Crow, and in *Projects for Grades IV, V, and VI*, by the same authors, also in *Major Projects in the Elementary School*, by Flora C. Fox, Federal Board of Education Bulletin No. 36.

3. The Study of Arithmetic

Ten Causes of Waste. Klapper has made a very interesting analysis of the causes of waste in the recitation. These are summarized as follows: (1) Time is often lost because of the inefficient class management. A considerable portion of the recitation is taken up by distributing material, ruling papers, and preparing headings. Teachers often force children to sit idly by as they draw elaborate diagrams or write lists of figures on the blackboard. (2)

The dictation of problems with unnecessary phrases is another practice that makes for waste in the recitation. (3) Time is often lavishly spent in working out examples containing wrong numbers and difficult combinations. (4) Time is wasted for some pupils because the work is not apportioned according to ability. To assign a set number of examples and hold all children responsible for the solution of the same number of problems involves waste for the abler children. (5) A recitation without purpose or aim is a means of dissipating energy and wasting time. (6) Over-drill undoubtedly wastes as much time and produces as much inefficiency as insufficient drill. (7) Indefiniteness of assignment is a serious cause of time waste. (8) The attention of the entire class need not be directed to explanations needed by a minority of the class. (9) Failure to use short cuts means needless expenditure of time. For instance, instead of asking for the area to be paved if a space measures 54 ft. by 129 ft., the numbers should be changed to 54 ft. by 125 ft., so that the child may add three ciphers and divide by 8. (10) Another cause of waste in the recitation is the assignment of problems that are outside the scope of practical business and home usage.

The methods which Klapper suggests for eliminating this waste are given in his book which is listed at the end of the chapter.

The Complexity of Simple Operations. We have a deep-grounded feeling that arithmetic is simple. But this feeling is erroneous. For instance, in such a supposedly simple thing as ordinary column addition Thorndike shows that there are seven different abilities that are needed in adding. These run as follows: (1) Learning to keep one's place in the column as one adds. (2) Learning to keep in mind the result of each addition until the next number is

added to it. (3) Learning to add a seen to a thought-of number. For instance, if the child has already added 5 and 7 as he runs up the column he will have to carry 12 in his mind (a thought-of number) while he adds the next figure, 6, a seen number, to it. (4) Learning to neglect an empty space in the columns. (5) Learning to neglect the zeros in the column. (6) The application of the combinations to the higher decades. For instance, a child may know that 8 plus 7 make 15, but may have considerable difficulty in knowing that 38 plus 7 make 45. (7) Learning to write the figures signifying units rather than the total sum of the column. That is, if the first column totals 45, his tendency is to write 45 at the bottom, when as a matter of fact he needs to put down the 5 and carry the 4.

The significance of this analysis is quite clear. Every operation in arithmetic is constituted of many separate steps, and each step, except with very gifted children, has to be given individual attention. Arithmetic is made up of a great mass of specific elements, each of which has to be taught separately. Therefore, the successful teacher has to analyze the operations, see what the steps are, and teach them all. Some will be found to be more difficult than others, and these need to have special attention paid to them.

Teaching the Processes. There are three facts of importance in teaching the processes of arithmetic. The first fact is that when children begin to study arithmetic they know a great deal about it in a concrete form but they have to learn to use symbols. For instance, if the pupil is given one apple and then another and asked how many he then has, he will probably be able to state that he has two; but for this he has to learn the symbols that express the abstract relationship involved — that is $1 + 1 = 2$.

To learn to think by symbols instead of by objects is a

very long step for children to take. Therefore we begin the teaching of numbers by the use of objects, and objects should be used until the pupils can get along without them. Of course, an effort should be made to get them to do this as soon as possible, but they must not be hurried. Whenever a new process is to be taught, objects, diagrams, etc., that will make it easier to understand, should be used until the new work is mastered. Often a diagram will help an eighth-grade pupil to understand a problem, when, for a long time, he has been able to perform addition and multiplication without objects.

The second fact in teaching the processes is that where the process is too hard for the pupils to understand, but not too difficult for them to use, it should be given to them without explanation. If square root is taught in the eighth grade it is unwise to explain why we double the quotient and multiply by the new quotient, because that cannot be understood until the pupils have some knowledge of algebra.

On the other hand, if the pupil can be easily taught the reason for the process it should not be taught to him mechanically. For instance, we may tell a pupil in teaching carrying in addition to put down the right-hand digit in the sum and carry the other digits to the next column to the left. But it is so easy to teach him the reasons for carrying, through the use of bundles of splints, that it is criminal not to do so. The third fact is that in teaching rules and principles, induction may frequently be used to good advantage. For instance in such a lesson as the addition of fractions, after the children have learned to add fractions with the same denominators and are to be taught to add fractions with unlike denominators, the teacher, instead of telling the pupils how to do it might begin the lesson by giving them a few drills on $1/3 + 2/3$, $3/4 + 2/4$, etc. Then $1/3 + 1/5$ may be put on the board and the

children asked to add them. Since they cannot, the teacher may then say, "I shall put three problems on the board to show you how it is done, and you may work out the rule for me."

$$\frac{1}{3} + \frac{1}{5} = \frac{5}{15} + \frac{3}{15} = \frac{5+3}{15} = \frac{8}{15}$$

$$\frac{1}{4} + \frac{1}{3} = \frac{3}{12} + \frac{4}{12} = \frac{3+4}{12} = \frac{7}{12}$$

$$\frac{1}{5} + \frac{1}{6} = \frac{6}{30} + \frac{5}{30} = \frac{6+5}{30} = \frac{11}{30}$$

This presents three particular cases which the pupils compare. From the comparison they reach a generalization about what is done in all the cases. After they have discovered how it is done, the teacher may take up the reason underlying the process in order to insure the pupils' getting something more than a mere mechanical knowledge of the rule. The inductive method can be used in very many cases in arithmetic; and when it is used the pupils take much more interest in the process than if they are merely told how the work is performed.

Solving Problems. The form that this analysis takes is based upon psychology; that is, upon the way the mind acts in solving problems. A very simple statement of the mental actions involved in solving problems will make this clear.

I remember that once I was given this problem to solve:

A man sends \$30,037.50 to a commission merchant to invest in wheat at $\frac{1}{8}$ per cent commission. How many dollars' worth of wheat is bought?

I figured as follows:

If the rate of commission is $\frac{1}{8}$ per cent, then the amount of commission is $\frac{1}{800} \times \$30,037.50$, or \$37.54, and the amount invested is \$29,999.96.

But, on second thought, I found that, if this were invested at 1/8 per cent commission, the amount would be \$37.49, which did not agree with the commission as worked out on the other basis. So I figured again, and after one or two other trials arrived at the idea that to invest \$100 it was necessary to send \$100.125, and hence the amount to be invested would be

$$\frac{100}{100.125} \times \$30,037.50, \text{ or } \$30,000, \text{ making } \$37.50$$

Then I checked up and found that \$30,000 invested at 1/8 per cent was \$37.50. So I concluded that this answer was correct.

Finally, when I knew it was correct, I wrote out a solution in good form for the teacher as follows:

\$100.125 must be sent in order to invest \$100.

\$30,037.50 must be sent in order to invest

$$\frac{100}{100.125} \times \$30,037.50 = \$30,000.$$

\therefore \$30,000 must be invested.

Check. $\$30,000 \text{ at } 1/8 \text{ per cent commission} = \$30,000 \times .125 =$
 $\$37.50$

Amount sent = \$30,037.50. Correct.

If we analyze what was done, we find the following factors:

- (1) I had to know what was to be found. In this case the amount invested.
- (2) I needed to know what data were given. These were \$30,037.50 sent, commission 1/8 per cent.
- (3) I tried two plans of solution before I found the right one.
- (4) I checked to see if I was right after trying each plan.
- (5) I wrote out a systematic statement.

This is what we always do when we have to work hard problems. Logic applies some technical terms to these

factors which it is well for us to know. The logician would say that in solving a problem we need *first*, to define our problem; *second*, to find out the data; that is, what is given; *third*, to make several hypotheses (or guesses); *fourth*, to verify the hypotheses; and, *fifth*, to make a logical organization.

For our purposes in arithmetic, more familiar terms may be used. And we may say that what we have to do are the following:

- (1) State what is to be found.
- (2) State what is given.
- (3) Work out a solution.
- (4) Check.
- (5) Make a systematic statement.

These five steps will take care of the analysis of any problem. Take, for instance, a problem like this:

If milk is 28 per cent cream, and the cream is 35 per cent butter fat, and the butter fat will make $1\frac{1}{2}$ times its own weight in butter, how many pounds of butter can you get from 100 lbs. of milk?

If we analyze it, we may make the statement as follows:

- (1) To find: Amount of butter from 100 lbs. of milk.
- (2) Given: Milk is 28 per cent cream, cream is 35 per cent butter fat, 1 lb. butter fat makes $1\frac{1}{2}$ lbs. butter.
Given also: 100 lbs. milk.
- (3) Working out a solution.
- (4) Check.
- (5) Systematic statement:

$$100 \text{ lbs. milk} = .28 \times 100 \text{ lbs. cream} = 28 \text{ lbs.}$$

$$28 \text{ lbs. cream} = .35 \times 28 \text{ lbs. butter fat} = 9.8 \text{ lbs.}$$

$$9.8 \text{ lbs. butter fat} = 9.8 \times 9/8 \text{ lb. butter} = 11.025 \text{ lbs. butter.}$$

$$\text{Check: } 11.025 \times 8/9 \times 100/35 \times 100/28 = 100.$$

In connection with this I wish to make a few remarks.

First. The statement that pupils make of a solution should be written neatly enough to be easily read. The

teacher and pupils should decide on what they think are the best forms for statements, and the pupils should thereafter adhere pretty closely to these. But — and this is very important — a pupil should not be scored heavily if he is not successful in making a statement, provided he gets the answer. Many teachers lay so much stress on statements that children come to hate arithmetic. The answer is the important thing in ninety-nine cases out of a hundred; the other case is the occasional chance that a pupil has hit upon the answer by accident and does not understand how he found it. Statements should be insisted upon, I think, only in seat work, and in other cases where the teacher is in doubt about the pupil's ability to solve the problem.

There is no best statement. Any one of a number will do, and children coming from other schools may have different ways of expressing their solutions. At such times the teacher should go slowly and patiently in teaching them the forms current in their new surroundings. Statements should not be cumbersome. Each step in the solution of a problem should be as brief as possible, and I should be willing to accept the following statement for the milk problem as correct and sufficient:

$$\frac{100 \times .35 \times .28 \times 9}{8} = 11.025 \text{ lbs.}$$

It shows the teacher that the pupil knew what to do and did it.

Second. The directions for solving a problem need not be written out by the pupils in every problem. It is cumbersome, but pupils should probably be taught to follow that plan. That is, they should be taught, first, to look for what is to be found; second, to find the data, etc. When these directions about solutions are being taught, they

should, occasionally, be written in order to help the memory until they can be repeated by heart; but after that it is sufficient if the pupils are able to give a statement of the steps from memory when called for.

Third. The third step, that of guessing, is a good thing for the pupils. (By guessing is meant an intelligent guess, not a wild guess.) They should not be shown at once how to get the right solution; but, rather, they should be given time to work the problem for themselves. However, children in country schools have to do more of their work for themselves than do children in city schools where the teacher has more time to spend on them. That fact explains why country pupils who are good students are more independent in their thinking, and more self-reliant than are city school children. They are compelled to work things out for themselves, trying over and over again till they get the right solution.

Summary. There are five steps in solving a problem in arithmetic. These are: (1) determining what is to be found; (2) stating what is given; (3) working out a solution; (4) checking; and (5) making a final statement. The statement is not always essential and should not be allowed to kill interest. The pupils should be given a chance to work a problem for themselves before being shown how; and, in working their problems, they should use a systematic procedure, such as the five steps above, because that has been found to be the natural way for the mind to act when working most effectively.

Thorndike, in the reference listed at the end of the chapter, gives a number of illustrated lessons in the use of inductive and deductive reasoning, from which I shall quote one on short multiplication without carrying.

INDUCTIVE EXPLANATION

1. The children of the third grade are to have a picnic. 32 are going. How many sandwiches will they need if each of the 32 children has four sandwiches?

Here is a quick way to find out.

- 32 Think "4 \times 2," write 8 under the 2 in the ones column.
4 Think "4 \times 3," write 12 under the 3 in the tens column.

2. How many bananas will they need if each of the 32 children has two bananas?
 32×2 or 2×32 will give the answer.
3. How many little cakes will they need if each child has three cakes?
 32×3 or 3×32 will give the answer.
- 32 $3 \times 2 = \dots$ Where do you write the 6?
3 $3 \times 3 = \dots$ Where do you write the 9?
4. Prove that 128, 64, and 96 are right by adding four 32's, two 32's, and three 32's.

$$\begin{array}{r} 32 \\ 32 \\ 32 \quad 32 \quad 32 \\ \hline 32 \quad 32 \quad 32 \end{array}$$

Summary. In teaching the processes, three things need to be borne in mind. These are: (1) Pupils have to learn (slowly) how to use symbols instead of objects; (2) in teaching the processes the reasons for them may be given where they are not difficult, but the teacher should not hesitate to teach the process mechanically when the explanation is too difficult; (3) the inductive method should be used as much as practicable.

Points to Stress. Thorndike has mentioned a list of difficult points which the teacher is inclined to neglect, but which should, as a matter of fact, be strongly emphasized. (1) Numbers should be taught not only in connection with objects but in connection with length, volume, and weight. He says that lines should be labeled "1 foot," "2 feet," "1 inch," "2 inches," and so on; that weights should be lifted and called "1 pound," "2 pounds," and so on, and that things should be measured in glassfuls, handfuls, pints, and so on. Numbers should not all be taught in connection with separate objects like apples, blocks, and so on.

(2) Additions in the higher decades should be empha-

sized. Stress should not be laid merely upon $6 + 7 = 13$, but on $16 + 7$, $26 + 7$, etc.

(3) With reference to uneven divisions, the quotients with remainders for the divisions of every number to 19 by 2, 29 by 3, every number to 39×4 , and so on, should be taught as well as the even divisions. He suggests a table like this:

$$\begin{aligned} 10 &= \dots \text{ 2s} \\ 10 &= \dots \text{ 3s and } \dots \text{ rem.} \\ 10 &= \dots \text{ 4s and } \dots \text{ rem.} \\ 10 &= \dots \text{ 5s} \\ &\quad * * * * \\ &\quad * * * * \\ &\quad * * * * \\ 89 &= \dots \text{ 9s and } \dots \text{ rem.} \end{aligned}$$

(4) The equation form should be stressed. This is done to get the pupils familiar with the equation long before they reach algebra. Children may be asked to write the missing numbers:

$$\begin{array}{rcl} 4 + 8 &=& \dots \\ 5 + \dots &=& 14 \\ \dots + 3 &=& 11 \\ \dots &=& 5 + 2 \end{array}$$

(5) Addition and subtraction facts in the case of fractions should not be overlooked. Children should get into the habit of seeing halves and thirds in terms of sixths, thirds and fourths in terms of twelfths, and fourths and eighths in terms of eights, and so on.

(6) Certain protective habits should be built up. In multiplying and dividing with fractions children should be taught clearly so that they will remember in connection with multiplying by a fraction the following three facts: (1) When you multiply a number by anything more than "1" the result is larger than the number. (2) When you multiply a number by "1" the result is the same as the number. (3) When you multiply a number by anything

less than "1" the result is always smaller than the number. In dividing by a fraction children should learn the rules by drill, and have them exemplified in practice, that when you divide a number by anything more than "1" the result is smaller than the number; when you divide a number by "1" the result is the same as the number; and when you divide a number by anything less than "1" the result is larger than the number.

(7) That "per cent of" means "hundredths times," should be stressed. In case of percentage examples like the following should be given:

5 per cent of	= .05 times
20 per cent of	= .20 times
6 per cent of	= .06 times
25 per cent of	= .25 X
12 per cent of	= .12 X
3 per cent of	= .03 X

(8) Habits of verifying results should be formed. Children should make it a matter of routine, carried on with every problem, to check the answer by going over it again, or by some other way before they leave it as finished.

Drill. To work problems is the final goal of arithmetic. But no pupil will have much success or happiness in this task unless he knows the fundamental operations so well that he can perform them rapidly and accurately. If, in the problem above he makes mistakes in multiplying .35 by 28, and finds everything coming out wrong, he will grow discouraged and distrustful of himself. To get accuracy and rapidity we need drill. As we have seen, what is needed is (1) a clear initial understanding. The pupils must know the facts of addition, subtraction, and so on, to begin with. Care must be taken to see that each is taught clearly, then (2) follows attentive repetition (3) carried on in a happy mood. Children must have exercises of various

sorts that develop speed and accuracy. Every time the teacher finds the pupils making errors in their problems he should make occasion to point out the fact and introduce drill.

Practice drill periods should be from ten to fifteen minutes long. The pupils should, according to Monroe, work for speed rather than accuracy, because he states that accuracy tends to follow along with speed. Drill work is most successful when carried on under pressure. Children should try to solve as many problems as possible in a certain time. In oral work the teacher gives the problems as rapidly as practicable; multiplication tables may be taught in a bunch rather than spread over two or three years, but care must be taken to see that the pressure is not too great for the class.

One of the best means of drill is mental arithmetic. Five minutes spent upon oral arithmetic at the beginning of a period is an excellent tonic, and actually saves time during the rest of the recitation. Mental drill should be conducted slowly enough so that at least three fourths of the pupils can give the correct answer. Speed should, however, be increased as the class improves and occasional bursts of speed should be indulged in for the sake of the brightest pupils. One of the best means for stimulating the pupils' interest in drill is to give them tests for speed, such as the Courtis tests or home-made tests. The results, as has been said before, should be recorded and graphed so that the pupil may be able to see that on March seventh he had a score of 64 in speed and on April first had a score of 67. When he sees this he will try to beat his record by April fifteenth.

Then there are many devices to be used in class, such as memorizing tables, multiplying the numbers on the dial of a clock by various multipliers, and so on. These and others

of a similar sort are mentioned in references at the end of the chapter.

Emphasis must be laid upon the fact that drill work must be snappy and speedy. Some teachers cannot be good teachers of arithmetic because they have none of that good old household remedy "ginger" in their make-up. A class will be just as spirited as the teacher and no more. If the football coach does not put snap into the team he is beaten and he may lose his job, but if the teacher does not put snap into his arithmetic no one knows about it. He is able to cover up his slovenliness. It would be better for him if he were in the limelight as is the football coach. Emphasis must also be laid upon the fact that drill in arithmetic is useless unless it is carried beyond the point where the child can perform the operations of arithmetic automatically. A little drill is of no use. It must go all the way or be futile. When a boy has learned his operations so well that he can add a column of figures correctly while thinking about a piece of watermelon he has reached perfection — for he has reached the goal of all habit — to perform an action while thinking about something else.

Summary. Drill is of prime importance in arithmetic. After an operation is understood it should receive snappy drill at frequent intervals until it becomes automatic.

Practice Tests. Several sets of practice tests have been devised for drill in the fundamental operations. These agree in giving sets of exercises which involve all the combinations in each of the four fundamental operations and require the students to get each exercise correct within a given standard of time before going on with the next exercise. The results of this work, especially in Grades IV, V, and VI, are quite striking. For instance, in Boston, Ballou found that by using the Courtis Practice Tests for a year and a half in thirty-five school districts, the fourth

grade grew as much in speed as was ordinarily accomplished in two years, and in accuracy as much as in four years. Melcher in Kansas City found that with twenty-two days' work with failing pupils in the summer, using the Courtis tests each day, there was an increase of from one half to two years in skill.

The Courtis Practice Tests may be obtained from the World Book Co., Yonkers, New York. The Studebaker Practice Tests may be obtained from Scott, Foresman & Co., Chicago. The Studebaker tests have an edition prepared for rural schools.

Application. To work life problems is, as we have said, the goal of arithmetic instruction. These problems may come from three sources — the teacher, the textbook, and the pupils. The problems should be practical. There is no use in teaching processes that do not have practical applications. So, if the text used in the schools does not contain many practical problems the teacher must secure other texts which have them and in addition make up problems of his own. Criticism is constantly made that pupils may know arithmetic but that they are unable to cast up an account, to write a receipt, draw a note, write a check, compute interest, measure a field and tell how many acres are in it, estimate the amount of money necessary to build a henhouse, or determine the number of bushels in a bin or corncrib; nor can we deny the accusation.

To cure this defect the teacher should study the home life of the pupils, and make a list of the things in connection with which their fathers and mothers use arithmetic in their everyday lives. This list should be kept on file and from time to time as the occasion arises in school, these items should be introduced as practical applications of what is being taught in the arithmetic class.

Pupils should be encouraged to bring in practical

problems for the class to work upon. What is more interesting than for John, when his father is going to build a cattle shed, to get the dimensions, etc., from him and have the class work out the cost of the lumber. John may not bring all the data to school the first time he tries, but when he finds that the class cannot work his problem because he has forgotten something, he will receive a valuable lesson in carefulness and will take pains to get the proper statements the next time. If none of the pupils of their own initiative bring problems, the teacher, when he hears of the construction of a building or the selling of cattle, as he will in a country community, should embrace this opportunity of getting life materials for arithmetic and ask some boy or girl to get the data for him.

Summary. To solve problems, and especially practical problems is the final goal of all arithmetic study. The teacher, therefore, should see that the pupils are given this type of problem and should avoid the unreal and imaginary problems which are frequently constructed by textbook writers for the sole purpose of giving exercises in arithmetical operations. Pupils likewise should be encouraged to bring practical problems to the school.

Tables. The critical point in the mastery of the four fundamental operations — addition, subtraction, multiplication, and division — is the learning of the tables. For, although a pupil may be able to recite the tables glibly and still make many errors in carrying on the operations in problems and exercises, he wastes time and loses accuracy if he does not know them glibly.

The chief advantages of knowing the tables automatically are two. In the *first* place the tables give a rhythmical drill. There is such a fascinating swing to them that children who are learning them often repeat them for the fun of the jingle, just as they repeat nursery rhymes for the rhythm. Yet from this singsong repetition there is much good; for the child is saying over and over to himself

$6 \times 7 = 42$, all the time fixing the facts and working toward that goal which is attained when 6×7 automatically suggests 42. The *second* advantage of well-memorized tables is the hold it gives on individual facts. For instance, Willie may have trouble in remembering whether $8 \times 7 = 54$ or 56. But he always remembers, let us say, $8 \times 5 = 40$. So by starting at $8 \times 5 = 40$, he can get into swing of the table; and when he gets to 8×7 he at once remembers that, of course, it is 56.

Eight seconds is a reasonable time to take in repeating a table. This requires that they should be memorized until the pupils are able to repeat them without halting. It takes just a little more practice to raise halting tables to glib tables, but that little makes or mars their usefulness, for halting tables are of no more use than no tables.

Tables should be memorized in three ways: forward, backward, and by "skips." The first and second can be done by the pupil himself. By skipping is meant taking the facts out of their order in the tables; for instance, instead of saying, $8 \times 1 = 8$, $8 \times 2 = 16$, etc., the order may run: $8 \times 5 = ?$ $8 \times 9 = ?$ $8 \times 2 = ?$ etc. This comes in exercises such as 8467×8 or in special drill exercises given by the teacher as in the clock-face exercise. The aim of the drill upon tables is to make the pupil proficient in skipping; because in problems, only once in a great while do we get a problem as nearly like the table as 1234×8 .

Summary. Tables should be memorized thoroughly backward, forward, and by skipping. They should be learned for all the operations, because they provide rhythmical drill and assist the pupil when he forgets individual facts. But to be of any use they should be memorized so thoroughly that they can be recited without halting and with the glibness of "eenie — meenie — minie — mo."

Assignments. Assignments are easier to make in arithmetic than in history or literature. For, as we saw in

those subjects, the teacher often has to make out assignment problems, but in arithmetic the problems are already made out.

But this one fact must be emphasized. Children should not be expected to learn new operations from the text-book. These should always be developed in class. A teacher may, for instance, give as an assignment a chapter on addition of fractions which has not been studied before, and expect the children not only to add fractions, but to learn the operations for themselves. This is wrong. Addition of fractions should be assigned after it has been learned in class.

In history the new assignment cannot always be read in class, and pupils may work upon it for themselves in preparation for the next recitation. But history is easy, while arithmetic is hard; so the teacher must help the pupils to understand the arithmetic by taking it up in the recitation period before they work any problems in it by themselves. Klapper presents eight excellent rules for the guidance of teachers in the assignment of home work in arithmetic. (1) He says that the home work must be supplementary to the school work and the application of what is taught in school. (2) It must also be assigned with careful attention to time. Children should not be given lessons that are too long. (3) Home work must be assigned with careful attention to the difficulties involved. Very difficult material should be taught in school rather than studied at home. (4) Home work must be corrected in class by the teacher or by the pupils. Uncorrected home work will not be done. (5) Home work should be kept in notebooks. The aim is to have an accumulative result which will show the pupil at a glance his proficiency from day to day. (6) The pupil must be assured of a favorable place for studying his home work. This means that the

teacher sometimes will have to educate the parents on this matter. The average mother is glad to help if she knows what to do. (7) All pupils should not have the same home work assigned. Some children are not in need of so much drill as others. In other cases bright children can be given more home work than the slow. (8) Not all home work need be written. For instance, if tables are assigned for home study it is not necessary to require all the children to write these tables a certain number of times.

REFERENCES FOR CLASS READING

- BROWN and COFFMAN. *How to Teach Arithmetic*. (Many excellent specifics.)
- JESSUP and COFFMAN. *The Supervision of Arithmetic*, pp. 1-20. (The subject-matter of arithmetic.)
- *KENDALL and MIRICK. *How to Teach the Fundamental Subjects*, pp. 170-86. (Skill in calculation and application.)
- *KLAPPER. *The Teaching of Arithmetic*. (Particularly good in specific details for handling the fundamental processes of arithmetic.)
- McMURRY. *Special Method in Arithmetic*, pp. 148-79. (Illustrative lessons.)
- *MONROE. *Principles of Method in Teaching Arithmetic*, Part II, *Eighteenth Yearbook of the National Society for the Study of Education*. (Twenty-five principles for teaching arithmetic, summarizing scientific investigation in the field.)
- *MONROE. *Measuring the Results of Teaching*. (A description of standard tests.)
- SMITH. *Number Games and Number Rhymes*, pp. 4-28 (games involving number); pp. 68-93 (number games).
- SUZZALO. *The Teaching of Primary Arithmetic*. (Concrete material, specific methods, etc.)
- *THORNDIKE. *The Psychology of Arithmetic*. (Written in technical language, but full of good suggestions.)
- WILSON. *The Motivation of School Work*, pp. 158-82. (Motivation of arithmetic.)

CLASS QUESTIONS

1. If you are not to explain arithmetic study as training in logical thinking, what good reason for it can you give?
2. Select four topics taught in arithmetic which are not used by pupils or farmers in practical life. Show that even where they seem to be

used they are actually not used or need not be used by people who could use them if necessary.

3. Run through fifty pages of the advanced arithmetic in use in a school with which you are familiar and count the number of problems that are not mere exercise problems and are likely to occur in the lives of the people whom you know. How many problems and exercises are there altogether? What percentage of the problems are practical?
4. Keep track for seven days and see what arithmetic problems you have to solve outside school work. What topics in arithmetic would you need to know to solve them all?
5. Inquire till you find five adults who, while in school, did not like arithmetic. What were their reasons? Were these reasons such that with wise handling they could have been overcome? If so, how in each case?
6. What are the generic values that a teacher may use in getting interest in arithmetic? To what extent and when may the teacher use each?
7. Go out into the community and find ten good, interesting (and not trivial) practical problems that might be given an eighth-grade class in arithmetic.
8. Why should pupils learn arithmetical operations thoroughly as they go along? What reason is there for thoroughness in arithmetic that does not hold so strongly for history?
9. Analyze three problems in arithmetic according to the plan recommended in the text.
10. Describe two problems outside arithmetic in which you had to try several solutions before you reached the right one. Pick out some great problem in history, and show the different solutions that different generations have tried.
11. Collect ten good arithmetic drill devices from your own experience, from friends, and from the reference readings.
12. To give mental arithmetic to a class in an efficient manner, what points must you observe?
13. If one knows his tables well, he should be able to repeat a multiplication table in eight seconds. Time yourself. Time a few of your friends. Time a few grade children.

CHAPTER XIII

HEALTH EDUCATION

1. Subject-Matter

Function. Health education as studied in the grades consists of anatomy, physiology, hygiene, and physical exercise. By anatomy is meant the structure of the organs of the body; by physiology is meant the function of the organs, and by hygiene is meant their care. For instance, in the study of the teeth, there are three things to be considered: the structure of the teeth — root, neck, and crown; dentine, cement, enamel, and pulp (anatomy); the function of the teeth — mastication (physiology); and methods of preventing decay (hygiene). When I was a boy school physiology consisted chiefly of anatomy; that is, of the study of the different parts of the body. We learned the names of all the bones, of the structure of the heart, lungs, digestive organs, etc. Only slight attention was paid to the function of these organs. We did learn that the function of the heart was to pump blood through the system and the function of the lungs was to remove impurities from the blood and purify it with oxygen, but comparatively little time was spent on this. The evil effects of alcohol, however, were graphically depicted.

To-day the emphasis is wisely changed. The most important function of the study of physiology in the grades is to teach us how to take care of the body. If rules of hygiene are learned so thoroughly that they will be applied in practice, we may consider the subject to be well taught. No matter how much anatomy or physiology is studied in

school it is of little worth if resulting from this study there does not follow the *practice* of the rules of hygiene. It is interesting to know how teeth perform their functions and what constitute the different parts of a tooth, but this is not of sufficient importance to be taught unless it forms a basis for rules about cleaning and caring for the teeth, and the forming of habits to carry the rules.

We study anatomy to explain the rules of hygiene. For instance, one rule of hygiene is "Clean the teeth." This rule may be followed by the children without question, merely because parents and teachers insist upon it, but children are more likely to follow the rule if they know why they ought to clean their teeth. This anatomy explains in part as follows. The crown of the teeth is composed of three layers — enamel, dentine, and pulp. In the pulp is situated the nerve. In the mouth are bacteria which, unless removed, will eat through the enamel and dentine, thus exposing the pulp and nerve. Therefore the teeth should be cleaned after each meal to get rid of decayable food which harbors these bacteria.

It follows from this that no more anatomy should be taught than suffices to explain the rules of hygiene. The human body is an organism so complex that its structure is not fully understood even by doctors, and in school physiology much more is frequently presented than can be understood by the children. If, therefore, we teach only enough to give the reasons for rules of hygiene we may safely and wisely omit some material which is now given in most school physiologies.

Summary. In the study of health education in the grades the end to be attained is a knowledge of, and practice in, the rules of hygiene. The study of the anatomy of the body should be made in sufficient detail to explain these rules, if they are easily explainable and no parts of the body whose connections with these rules cannot be seen by the pupils need be studied.

Rural Health. It has long been a popular tradition that health conditions are better in the country than in the city, but within recent years this has been proved to be a fallacy. For instance, the death rate of New York City is lower than that of the state of New York outside of New York City, and the statistics of the first draft showed no superiority on the part of the men from rural communities. When we stop to consider the matter we can easily see that though rural people have plenty of fresh air and exercise they have certain handicaps. Housing conditions are frequently bad. Rural people are not so well acquainted with the rules of hygiene as city people. The rural school-houses are often in deplorable condition, while in the city schools the health is unusually well taken care of. The most serious of these defects is the lack of knowledge of hygiene, coupled with the difficulty of securing medical attention. Fortunately the rural schools are in a position to remedy this defect by methods to be described in the succeeding pages.

Ideals. Three ideals are of importance in the giving of health education. The first of these is the ideal of *healthfulness*. Children should be interested in health and should be in love with healthfulness as something to be worked for. The second ideal is *persistence* in the care of health. It is not sufficient for the children to have information. They need to apply the rules of hygiene persistently, not only when they are sick but as a preventive when they are well. Third, is the *understanding* of the human body as it bears upon preservation of health. They should set up as their aim the gaining of concrete and definite knowledge about the structure of the body and the function of its organs. This is much more important than spelling or handwriting.

The Teacher's Objectives. There are four objectives which a teacher should bear in mind in the teaching of

healthfulness. The *first* objective is to develop in the children a love for the care of health, including play; the *second* thing that should result from the study of health for four years is proper health habits. The children should have habits which do not lapse. They should clean the teeth every day. They should never allow flies to enter the house. They should always sterilize the milk cans, etc. *Third*, besides having regular habits where it is necessary to form these, they should learn how to apply the information about hygiene to the control of diseases. Not only should they know that colds are infectious, but they should apply this knowledge by avoiding contact with other people if they have a cold. In the *fourth* place, the graduate of the eighth grade should have enough knowledge of the physiology and anatomy of his body to understand why the rules of hygiene are effective. With a love for good health, an understanding of the physiology and hygiene involved, and a direct application of this in the form of good health habits and control of disease, the school will have performed a task of inestimable value for its graduates and the community.

Diagnosis. It will be remembered that in the chapter on spelling we were able to present lists of the most common spelling difficulties and stress was laid upon the fact that in teaching spelling it was necessary to diagnose the difficulties in order to find out exactly what should be taught. The same procedure holds true in all subjects of the curriculum, and in none more than in health education.

While the diagnosis of diseases is a matter for the doctor, it is nevertheless possible for the teacher to discern much about the physical difficulties of the children. Any teacher knows the most common and easily communicable diseases and is able to give standard tests for eyesight and hearing, but in addition to this it is possible for the teacher to make

a health survey of each school child. Hoag has a card, containing twenty-five questions, which when answered by the child will give the teacher a good deal of information about him. This will be found in the book by Andress listed at the end of the chapter. After doing this or without doing it, the teacher can detect the presence of communicable diseases in the schoolroom and can learn from the children, the doctor, and the nurse the other sorts of infectious diseases in the neighborhood. When these diseases occur they can be made the subject of study in the school. A very good illustration of such a study is given by Collings. The teacher in the rural school heard of the occurrence of a case of typhoid in one of the homes of the community and used it as the topic for a series of lessons on the causes of typhoid, with the result in this case that the children prepared a report for the owner of the house who, interestingly enough, followed their suggestions. Securing occasions for the teaching of hygiene is not a matter of finding the occasions; rather is it a matter of selecting from so many that the full time of the school might be spent in teaching physiology and hygiene alone.

Course of Study. The facts of health education may be taught both incidentally and systematically. Clearly they can be taught incidentally every day in the year in connection with schoolroom ventilation, eyesight, and many other opportunities for giving personal advice that come up daily in the school. When colds occur methods of cure should be discussed with all the school. Measles, whooping cough and mumps, as they annually recur, should likewise be the basis for instruction upon the facts secured from the doctor or from reliable books.

In addition, in the seventh and eighth grades, the subject should be taught systematically and should alternate

by years. In this systematic study the adopted text and supplementary books and bulletins should be used by both the teacher and the pupils and at every point the topics should be closely and interestingly connected with vital needs in the pupils' experience.

What should be taught throughout the grades is difficult to state with definiteness because much of the content depends upon the health needs of the community. Andress gives twenty-five desirable health habits which should be taught and twenty-nine others that should be discouraged. These run as follows:

Desirable health habits. (1) Cleanliness of body, especially of the hands, and cleanliness in the schoolhouse and on the school grounds; (2) cleaning the teeth; (3) ventilating the schoolroom; (4) correct sitting and standing postures; (5) proper breathing; (6) cleaning shoes before entering the schoolroom; (7) correct use of the voice; (8) right use of the eyes; (9) care of hair and nails; (10) use of individual drinking-cups, pencils, and other materials; (11) dusting school furniture; (12) proper cleaning of blackboards; (13) use of the handkerchief; (14) proper mastication of food; (15) eating only enough to satisfy the appetite; (16) cheerfulness at mealtime; (17) movement of the bowels once a day; (18) washing hands after going to the toilet; (19) exercise in the open air daily; (20) self-control; (21) sufficient sleep; (22) bandaging for ordinary emergencies; (23) properly cooking a few ordinary foods; (24) care in crossing the street in front of teams and automobiles; (25) care of milk and other foods.

Bad habits to be discouraged. (1) Putting anything into the mouth except food; (2) expectorating on the floor or sidewalk; (3) biting nails; (4) thumb-sucking; (5) "swapping" gum, food, etc.; (6) coughing in another's face; (7) kissing on the lips; (8) carrying soiled handkerchiefs; (9) picking the nose; (10) rubbing the eyes; (11) reading in a dim light; (12) putting foreign bodies in the ear; (13) cracking nuts with the teeth; (14) licking the fingers in turning the pages of a book; (15) overeating; (16) eating when tired; (17) using another person's brush, comb, towel, or drinking-cup; (18) wearing wet clothing; (19) bandaging a cut with a soiled rag; (20) wearing shoes that are ill-fitting; (21) negligence in bathing regularly; (22) not exercising daily in the open air; (23) neglecting a daily evacuation of the bowels; (24) not washing hands after going to toilet; (25) drinking an insufficient amount

of water; (26) grouchiness; (27) insufficient amount of sleep; (28) bad sitting and standing postures; (29) eating too fast.

He also quotes from Dr. Fisher fifteen rules of health which, if properly observed, will, in the opinion of Dr. Fisher, make for health and long life.

Air:

1. Have fresh air where you live and work.
2. Wear light, loose clothes.
3. Spend part of your time in the open air.
4. Have lots of fresh air where you sleep.
5. Breathe deeply.

Food:

6. Avoid eating too much.
7. Do not eat much meat and eggs.
8. Eat various kinds of food.
9. Eat slowly.

Habits:

10. Have your bowels move every day.
11. Stand, sit, and walk erect.
12. Avoid poisonous drugs.
13. Keep away from catching diseases.

Activity:

14. Work hard, but play and rest too.
15. Be cheerful and learn not to worry.

The foregoing are important health habits and to these is added in the course of study the material in the textbook and such other information as is necessary to control the diseases of the community and the health of the individual.

2. Interest

It is a quite interesting fact that the desire to preserve one's health is not a strong motive with children. Such an incentive does not begin to appear until one begins to grow older and has had some sickness or has reached middle life and begins to see that it is necessary for him to take better care of his body. But to children, with their abounding vitality, immediate interest in health is not particularly keen.

Consequently we have to look for certain types of mediate interest, and of these there are several. First among these are such generic incentives as a desire to be thought well of by the teacher. In addition to this, marks may be given for health practice as in other subjects. If grades are used, it is particularly important that the children be given grades for the forming of hygiene habits such as cleaning the teeth, keeping a correct posture, etc. Competition is frequently a strong incentive. The class may be divided into clubs or groups who compete with each other. Groups such as Yale and Harvard, or Chicago and Michigan, which compete with each other may be made up. National organizations, such as the Boy Scouts and Camp Fire Girls, who give badges, have had a tremendous influence upon the building up of right habits. The desire to be strong sometimes keeps young boys from forming the cigarette habit.

The coöperation of parents has an important place in the developing of interest. Many of the health habits such as correct posture and care of the eyes are matters which must be practiced at home as well as in school. So much is this the case that the coöperation of parents is absolutely essential for the formation of correct habits while at the same time it helps to keep the children interested in their work.

Particularly important is the keeping of records. The teacher can make a record of the sitting posture, in the schoolroom for instance, just as well as he can give grades for history and geography. In this matter the good faith and sportsmanship of the student is a factor. He can easily misstate the facts, but when the matter is put before him as a gentleman there is usually little difficulty in this respect.

It will thus be seen that interest in correct habits is difficult to obtain and all sorts of incentives must be appealed to if they are to be formed.

3. Methods of Teaching

Obviously the content of the course of study deals with two things of prime importance. One of these is devoted to the facts which it is necessary to learn and the other to the habits which it is necessary to set up.

Drill. That the habit is a difficult thing to form is shown clearly in the following quotation from Andress, who gives the diary of a pupil who spent twenty-five days in building up the habit of learning to brush her teeth five times a day. Brushing the teeth five times a day is a heroic task, but this is how it was accomplished:

On November 20, 1916, I decided to form the habit of brushing my teeth five times per day. I selected this habit because of the serious condition of my teeth. I decided to carry on the operation as follows:

1. Before breakfast.
2. After breakfast.
3. After lunch.
4. After dinner.
5. Before going to bed.

I began my practice November 21, 1916.

Nov. 21. I carried out my practice very successfully, not having one error. This was probably due to the fact that the habit was fresh in memory.

Nov. 22. I had two errors due to forgetfulness.

Nov. 23. There were four errors. Practice was omitted every time except in the morning. It seemed as if I was slowly climbing the ladder of errors instead of successes.

Nov. 24. I determined on this day to omit no practice, but contrary to my determination I discovered at the close of the day I had made one error. This was due to the fact that I had attended a theater party and was very tired when I returned.

Nov. 25. To my regret, on Nov. 25 I omitted the practice entirely. I arose at a late hour in the morning, and in my hurry I forgot the habit, but why I neglected it the rest of the day I am unable to explain.

Nov. 26. I found it was very hard to return again to the habit, and it was at this time I realized the value of the caution, "Allow no exceptions to occur." I struggled through the day with four errors.

Nov. 27. This day I gradually climbed the ladder to success. There was only one error.

Nov. 28. This was certainly a banner day for me — no errors.

Nov. 29. As good as my record was for the previous day, my record to-day was bad, for I neglected all practice.

Nov. 30. It seemed as if the Thanksgiving spirit had banished all idea of practice, for I had five more errors to add to my list.

Dec. 1. I returned from vacation with a renewed determination to practice faithfully; nevertheless I had three more errors at the close of the day.

Dec. 2. Two errors — after lunch and dinner.

Dec. 3. I was ill on this day and practiced the habit only once.

Dec. 4. Two errors.

Dec. 5. Only one error, but it seemed as if I could never again reach the point of zero.

Dec. 6. My desire was gratified. No errors.

Dec. 7, 8, 9, 10, 11, 12, 13, 14. On these days I practiced five times per day. I presume the habit is formed. It took three and a half weeks.

In the formation of habits an important essential is the securing of happiness. The chief trouble with those who do not get sufficient physical exercise is the fact that they do not like it. If they actually enjoyed the sensations that accompany a walk, or the feeling of exhilaration at taking their "daily dozen," they would look forward to doing them instead of making excuses for not taking the exercises or willfully neglecting to do them. This fact has not been fully recognized by those who try to set up new habits. Any habit which has to work against the interest and pleasure of the performer is doomed to failure. Consequently the teacher must help the children to feel elation and enthusiasm in the formation of their habits. The second important fact is that they must have a clear idea of what is to be done and they should be taught exactly how to perform the operations. If they are to take the correct standing posture the teacher must see that it is correct. Then they must repeat the action until it has become automatic. These simple rules for habit formation are

easy to state but difficult to carry out, and the teacher must introduce all the incentives which we have mentioned and others which he can invent to keep the habit in operation.

The foregoing remarks have dealt with the setting up of health habits. A word or two is necessary upon the memorizing of terms. When the teacher has decided what parts of human anatomy he will teach the words should be memorized by the pupils. If, for instance, heart, arteries, veins, ventricle, and auricle are to be taught, they should be drilled upon thoroughly. The pupils should be expected to be able both to spell and pronounce them glibly. The rules for this have been discussed over and over again. Particularly should there be attentive repetition until the terms have become automatic. If the pupils learn the words thoroughly they will be able to read health bulletins with intelligence all their lives (and it is becoming more and more necessary for people to be able to do this) but if the terms used are a jumble of indefiniteness to them they will form a distaste for all reading material upon the subject.

Clearness. A little boy on an examination was asked to name the parts of the body, whereupon he delivered himself of this astounding statement: "The human body consists of the head, chest, and stomach. The head contains the brains, if any. The chest holds the lungs, liver, and lights. The stomach consists of the bowels — a, e, i, o, u, and sometimes w and y." Andress quotes some students as giving the following answers on an examination: "The diaphragm is another word for backbone." "The pericardium is something that will put you to sleep." Another eighth-grade pupil varies the meaning of "diaphragm" by stating that it is very delicate and that it is located in the head. He is matched by a second who says that the bones

are made up of hard mucous membrane, while a third adds that the nervous system is a kind of tube "where the blood vessels are in."

Clearly such students are the victims of poor teaching, for the teacher has evidently not made a successful attempt to give them a clear picture of the anatomy of the human body. This is not a difficult thing to do if the teacher uses pictures, and especially if he spends time enough upon the "geography" of the organs to enable the pupils to locate the different organs and parts of organs. Some schools have models of the human body, though these are expensive. Others have colored physiology charts. Other teachers, where the plan is practicable, secure the organs of pigs, chickens, and beeves. All of this illustrative material is good and should be used as far as possible, but even with nothing but the pictures in the text the teacher can teach the anatomy of the body if he will treat it as a geography lesson and have the organs and parts of organs located and drilled upon. Something is gained if the children are able to locate by pointing with their fingers such important organs as the heart, the liver, the appendix, or the brain.

The Use of the Text. In teaching physiology from a textbook much the same plan may be used as was used in civics. That is, questions that lie close to the interests of the pupils should be raised, to be answered by the text or by supplementary reading. In listing these questions the teacher should select those which he thinks will be of interest to the pupils. For instance, the textbook before me, which I have studied for a short time, has suggested a number of questions. I am not sure, of course, that they are of interest to every member of any particular class. This is a matter which would have to be determined by the actual presentation to the class. But as I remember my-

self as a boy it seems to me that they would have been interesting.

This chapter that I have used is entitled, "The Circulatory System." The questions that follow are not arranged in logical order, but are given in the order in which they occurred to me.

The first question I think of is, "What makes a wound fester?" This gives a chance to teach white blood corpuscles and washing the wound with some antiseptic. When I was a boy we thought that the wound festered because the blood was bad. Lister's discovery that if a wound was cleaned with an antiseptic there was no danger of festering had not reached us. Other questions follow without comment. Why is it that sometimes when you cut yourself blood squirts out while at other times it oozes? This brings up the question of arteries and veins. What color is pure blood? Impure blood? What sort of liquid is in a blister? Why is a drinker's face red? What happens in the body when people blush? Where is your heart? How does the heart do its work? Why do we stick pigs in the neck? How can we stop nose-bleed? What is there in the blood that makes it clot? If a friend had a very severe wound in the arm or leg how would you stop him from bleeding to death? How does what you eat get into the blood? How fast does the pulse beat? What makes it beat?

The foregoing are only a few of the possible questions on this chapter. Others will occur to any one who works upon it. Children themselves ask the questions which, if jotted down, will do for other classes in the following years.

To teach this subject successfully the teacher must have a number of supplementary physiologies and bulletins collected from the sources mentioned above. This is necessary because very few books on the subject lay suffi-

cient stress upon hygiene and sanitation. The majority of the country schools now use texts that emphasize anatomy and physiology and only incidentally deal with hygiene and sanitation. Even where the text does not deal primarily with hygiene it is a good thing to have several of them on hand; boys and girls like to read about physiology and hygiene if they can find it simply written and well illustrated.

It may be necessary in the case of some of the adopted physiologies for the teacher to make certain that some consideration is given to bacteriology and sanitation in the course. The readers of newspapers to-day know a great deal about bacteriology but the lack of knowledge upon the subject on the part of pupils in many communities is surprising and tragic. Many people take germs with a laugh, but fortunately information upon the subject is offered free by boards of health, by state universities, and by medical societies. It can be made easily available to any teacher who will consult the nurse or doctor or will write to the state university. There is no defense for the teacher who is not sufficiently interested to gather it. There are many people and organizations who are not only able but anxious to provide such literature.

Physical Exercises. For children in the rural schools physical exercise is not a serious problem. They get a good deal of it. Occasionally, however, even in the country, there are boys and girls who do not get sufficient exercise, and the teacher should see that they do. Particularly is this true in poorly ventilated schoolhouses where the six school hours are a serious handicap to health. Teachers in such buildings should not only see that the ventilation is as good as possible but they should stop in the middle of the periods before and after recess, raise the windows high, even in winter, and put the pupils through a series of exercises

which will expand the chest and particularly stretch the muscles of the trunk. Setting-up exercises are also of importance because the work of the farm develops muscles which tend to keep the shoulders from being straight and erect.

Play. Country children even more than city children need to have an opportunity to play. The city children frequently do not have the space, but the country children do not live close enough together to congregate in groups sufficiently large to play and very often the variety of games that they can play is very narrow. Moreover, country children have so many duties to perform around the home that they do not have a great deal of time to play. Yet the pleasure that comes from playing is so deep and the importance of play is so great in the development of children that the teacher should give careful attention to the matter to see that a variety of games are provided. Descriptions of these games can be found in such a book as that of Andress, but even where books are not available the teacher can collect from other communities and schools the games which are particularly popular with the children and introduce them to his group. Moreover, he should seize the opportunity of participating in the games with the children wherever possible. It gives a kind of contact with the children that reflects upon their conduct in the schoolroom and increases their respect and admiration for him.

Projects. The methods that are described in Collings are illustrations of the project method. When Collings' teacher sought to help the farmer whose child had developed typhoid his pupils were working upon a project. Developing a correct sitting posture, cleaning the teeth, preventing colds and controlling measles are all examples of the project. Numerous other projects come to mind, such as extermination of flies, the screening of schoolhouse windows, getting

rid of rats, sleeping with the windows open, keeping the hands clean, and cleaning up the barnyard. These are a few of the simple projects that come quickly to mind. They are projects because they involve planning and thought and occur in their natural setting. They are not manufactured as a school exercise, but are actual problems which arise outside of school, and which, when introduced into school, do not change in character. The function of the school in connection with the project is well illustrated in these cases. The school helps the children to solve the problems in a way that they could not be solved by the children without the help of the school.

REFERENCES FOR CLASS READING

- *ANDRESS. *Health Education in Rural Schools*. (An indispensable book for rural school teachers who follow the suggestions which are presented in detail.)
- BREWER. *Rural Hygiene*. (A handbook of sanitation for the use of children and adults in rural districts.)
- *COLLINGS. *An Experiment with a Project Curriculum*. (Illustrative health-project lessons.)
- HOAG and TERMAN. *Health Work in Schools*. (A general textbook for teachers.)

CLASS QUESTIONS

1. Make up a series of twenty questions that can be answered by physiology, that you think will be interesting to seventh- and eighth-grade pupils.
2. Work out a series of rules for the prevention of tuberculosis.
3. Give methods that can be used in preventing typhoid.
4. How can ventilation be handled in the schoolroom in which you now work?
5. What facts do you think it wise to have the pupils learn about the anatomy of the nervous system as a basis for hygiene? About the digestive system? In each case, what facts would you omit from those given in any textbook you know?
6. If you took charge of a school, what are the points about sanitation that you would examine? How would you go about the care of each of these if each was not satisfactory?
7. To what extent and in what way may a teacher successfully carry a health crusade into the homes of the children?

CHAPTER XIV

AGRICULTURE

1. Subject-Matter

Function. The subject of elementary agriculture as taught in rural schools consists usually of agronomy, animal husbandry, horticulture, farm management, and roads. Agronomy is the subject whose function is the investigation of soils and crops; animal husbandry is concerned with the breeding, judging, and care of animals; horticulture is concerned with plants, trees, and vegetables; in farm management the most economical and efficient methods of handling crop production and marketing are considered; and roads deals with the question its name signifies.

Ideals. In the study of agriculture four ideals may be developed. (1) The study of the subject should heighten the appreciation of agriculture and the love of farm life. To know that scientists are working upon the subject shows that it is of some worth. To learn new ways of doing things, which appeal to common sense as being practical, increases interest. And the mastery of these methods produces that efficiency and financial gain which makes living on the farm attractive. Such an appreciation of agriculture keeps boys and girls on the farm and tends to decrease the movement from the country to the city. The advantages of country life have been painted in glowing colors, but so long as roads are poor, labor unintelligent, and drudgery ever-present, these pictures will have no weight with the boys and girls who keenly feel the defects of country life. The farmer always has to work hard, but

if he sees that he can have full scope for the use of his brains he will be much better satisfied. (2) The second ideal that can be developed is scholarliness. The children should be stimulated to become students of farm problems and store away in their minds a mass of definite information concerning agricultural methods and rural life. (3) The ideal of thinking things through for themselves should also be developed in the students. This can be done chiefly by recourse to the problem and project method of teaching. (4) The ideal of developing skill in the use of the information they gain should be worked upon. They should be taught to realize that knowing agricultural facts is not sufficient — that success is dependent upon ability to run a farm successfully.

The Teacher's Objectives. In teaching agriculture there are three important objectives for the teacher. (1) It is a teacher's business to develop in the pupils a love for farm life and for the subject of agriculture. (2) When the children have left the eighth grade they should have been taught as many of the important principles of agriculture as eighth-grade children can understand. (3) It is the business of the teacher to see that the children actually apply the knowledge which they have gained to the carrying out of school projects on the farm and the solving of their other problems which the school has not set.

Course of Study. In the grades the course of study in agriculture is not, and cannot be, entirely systematic. Here, if anywhere, the local needs determine what parts of the limitless field of agriculture should be studied. In the corn belt one set of problems will be emphasized, in the wheat belt another, and in the cotton belt a third. In one locality poultry is the important subject while in another cattle, and in still another fruit growing.

It has been the history of every subject taught in the

grades that when first used it is practical, but before long it becomes systematized. When it reaches this point the life has probably been pressed out of it. But a new day has brought hope for agriculture, for everywhere educators are now, as never before, laying stress upon the necessity for making grade subjects practical. It is therefore hoped that this greatest of rural school subjects will be saved from the fossilization which its predecessors have undergone.

To accomplish this the teacher should use the textbook only as a means to the solution of problems. It should not decide for the teacher all the topics to be studied, nor the amount of time to be spent on each. The writer of any given textbook lived in one locality and, consciously or unconsciously, constructed his text for that locality. Yet some class in a school a thousand miles away and living in a locality where topics other than those emphasized in the book are of greater importance, may have to use his test. In such a case it is quite absurd to allow the text to determine the order of topics or the time that is spent upon each.

The wise teacher will diagnose his community to find out the chief local crops and the most pressing agricultural needs. Having decided which of these are of most importance he will map out a two-year course of topics for the seventh and eighth grades. Then he will see that the books in the library, the text, and the bulletins from the Department of Agriculture at Washington and from the local agricultural college are used to discover what they have to say on these subjects. These materials should be put at the disposal of the pupils, who will read them in the handling of their topics.

The distinctive course in agriculture should be given in the seventh and eighth grades. It will be easy for work in these grades to alternate because agriculture is not a systematic subject like grammar, and the work of the

seventh grade is not necessary as a preparation for the work in the eighth grade.

In handling problems by this method the teacher must bear in mind that certain principles of scientific agriculture should be learned by the pupils. According to Nolan these consist of facts relating to permanent soil fertility, principles and facts concerning the life histories of beneficial and injurious insects, stages of fungus diseases, and principles and methods of plant and animal breeding. The teacher can check the facts taught in the textbook against these and supplement the text with other principles which may not be included in it.

Summary. Topics in the course of study should be practical. Agriculture must not be made a mere book subject. It cannot be taught without supplementary books and bulletins and when the pupils have finished the course they should have a knowledge of the important principles of scientific agriculture.

Nature Study. During the first six grades instruction may be given in that form of nature study which prepares for the study of agriculture and develops appreciation of rural nature. To quote Nolan:

There are six facts to be borne in mind in the selection of nature study material to be used in rural schools. (1) Nature study is a direct observation study of the common things and processes of nature from the standpoint of our human interest in nature as it touches our daily life directly. (2) Nature study should be differentiated from technical science both in subject-matter and in method. It may contribute to the further study of the science but it should not be technical, even though it be reduced to words of one syllable. (3) The aims of nature study are (a) to give general acquaintance with, and interest in, the common things and processes of nature; (b) to give training in accurate observation as a means of gaining knowledge directly from nature; (c) to give pupils useful knowledge concerning natural objects and processes as they directly affect human life interest. (4) The methods of all nature study should be observational. The teacher and pupils must here escape from textbooks and walls. Nature study and agriculture are live subjects and so are out-of-doors.

The pupils must see real things and see them themselves. (5) The materials to be studied must be the most common and the most interesting from the standpoint of everyday life. (6) Nature study must be for the child and not for the adult. We must recognize the principles of child study in all nature study work. The primary pupils ask, "What is it?" The intermediate pupils ask, "How?" and the upper-grade pupils ask, "Why?" in the presence of natural phenomena, and the school, through nature study, should answer these questions for the child.

For a detailed statement of the course in nature study based upon these facts the reader is referred to the Nolan reference at the end of the chapter.

The Project. Agriculture is the home of the project method. It was worked out in this field in some detail before it was adopted by teachers of other subjects. The state of Massachusetts was the first to develop the so-called "home project." In its schools the pupils undertook some project, such as poultry raising, at home for a whole year. They were then given for this project, a number of hens, chicks, and eggs, and it became their business to care for these and handle them as a business proposition. Then the school work in agriculture for that year centered particularly around poultry. In other years other projects were carried through. The instructor was hired for the year and visited the home projects during the summer months.

There is no longer any question about the value of projects in agriculture. They vitalize the work to a remarkable degree. Projects produce a deeper interest in school work than the ordinary textbook school work. They automatically make the pupils apply the information given in textbooks and they develop skill in performing farm practices. The boy may study about insects and insecticides in the textbook and learn little from the study, but if he has failed to use this knowledge in growing potatoes and finds that his crop has been reduced by twenty-five per

cent because he failed to sterilize them, he will never forget that portion of the agriculture textbook again. The methods of using the home project will be described at a later point in the chapter.

2. Interest

Immediate Interest. As in all other subjects, so in agriculture there may be either immediate interest in the subject or no interest. In this subject, however, the interest is essentially immediate for country pupils because it is for them a bread-and-butter subject.

The great problem is to sustain interest. To do this it is necessary not only to pick out interesting topics but to select the most interesting. It is necessary also that care be taken to select easy reading matter and to make difficult bulletins easier to study through judicious selection of the material to be read. If care is taken to make all the work and all the reading practical and fairly easy the interest will be sustained. The reading material must not, however, be too easy, because boys and girls do not like to read material that seems childish. When it is just hard enough to make them exert themselves in a vigorous and healthy manner it will be most effective.

Agriculture Clubs. Many schools and school officials use the club plan of work. This is becoming increasingly easy in the country because of the presence of county agents whose business it is to organize community clubs for children as well as adults. Frequently the county agent does not get from teachers the coöperation that is essential to his work. Sometimes this is his fault and sometimes the trouble lies with the teacher who, through indifference or hostility, neither makes advances nor coöperates when assistance is asked for. But whether the teacher works with the county agent or not there is much that he can do

in getting his students to carry on club work in one or more groups. Participation in agricultural exhibits and contests set for school children in the community or county is highly desirable. In brief, it may be said that every method for stimulating interest by an appeal to the social instincts of children should be used.

Besides the appeal to group work and participation in contests, there is another interest that should be utilized. This is the economic interest. If the children can be put upon projects which will earn them money, interest will be sustained. Sometimes the children have interest in saving money for their parents by canning, growing vegetables, etc., but this does not always appeal as strongly as do projects by which they can make money for themselves to be spent as they may wish. This method of appealing to the students is frequently an easy one to arrange for by the teacher who recognizes its value. Sometimes the arrangements may be made with the parents, to whom this method of securing interest may not have occurred. At other times it is sufficient to mention it to the children. The farmer's children have many more opportunities of earning money than have city children, and this incentive should be used quite frequently.

The notion that it is wrong to have children work for money is old-fashioned. It would be dangerous if they never did anything unless they were paid for it, but they have to do so many things without pay through love of parents, the desire to help, etc., that no harm can come from giving them two or three things during the year out of which they can make money for themselves.

Another means of creating interest in agriculture is found in its correlation with the other subjects of the course of study. The first to come to mind is arithmetic. In the chapter on arithmetic we showed how arithmetic would be

benefited through the use of practical problems around the farm and home. Conversely, these problems increase interest in the farm and home because the everyday project is seen in a new light when it is made the subject of study in school. Language, also, may wisely make use of the topics of everyday farm life and the value of these topics be thereby increased. Poetry may be used to good advantage. There are found in every set of readers a few classics that deal with farm life, such as "The Barefoot Boy," or "Pictures of Memory," but it still remains for some one to compile a supplementary reader, rich and interesting, which contains nothing but poems about farm life and the value of agriculture. Perhaps no subject has received more attention from poets from the days of Horace and Virgil until now, but the farm boy sees few of such poems. This is true in spite of the fact that the knowledge of this poetry should be second only to the study of agriculture and community civics in developing a deep and rich appreciation of farm life. Other subjects, likewise, may be correlated with agriculture to the mutual benefit of both.

Summary. In developing an interest in the study of agriculture considerable reliance can be placed upon immediate interest. But to sustain this interest the children should be given easy reading material. They should have the full stimulus arising from social organization and competition, they should be permitted to earn money for themselves, and the subject should be correlated with other branches of the course of study.

3. Methods of Teaching

Projects. In developing the home project in agriculture four steps are necessary as indicated in some of the references given at the end of the chapter. (1) Plans for the project must be made. (2) A calendar of monthly occupations for all field and indoor work, notebook and record work, reading and study, for each month of the year should

be prepared. (3) The study of the technical subject-matter should parallel, in so far as possible, the home work, and should include all closely related topics. (4) Simple laboratory work should be correlated with the project work in seasonal sequence.

A detailed list of projects will be found in several of the references at the end of this chapter. These will be suggestive, but the teacher must, in selecting from them or in selecting other projects, bear in mind that activities of superior interest to the particular community in which he is teaching must be chosen.

Problem Solving. In the study of agriculture through the project, or outside of it, we have a parallel with the methods described in teaching arithmetic. First, a good practical problem is set. For instance, this may be the picking out of ten good ears of corn. The children go to the corn pile or bin and experiment. The data that they use is their knowledge of what constitutes a good ear. They form hypotheses; that is, in this case, they examine one ear after another and finally select ten. These are checked up by the teacher, or some other corn judge, to see whether or not the selection is correct. Or the problem may be that of preparing a piece of ground for wheat. The data are the things the pupils know about the topic, and the material found in books and pamphlets. They think it over, discuss it, make suggestions, and finally arrive at a solution. To check, they have to wait until the wheat is grown; and, after all other factors are taken into account, they are able to see that the yield is better because of the preparation decided upon.

Collecting Data. The hardest problem in agriculture is giving the pupils data upon which to work. For instance, in the selection of ten good ears of corn the data are the things they know about good corn. This they have to

learn from the study of agriculture. Or, in our second example, the data are the facts about a good seed bed as they are given in bulletins and books. This has to be sought for with great care and memorized with exactness.

The best way of teaching these data is to take up problems first and teach a few data at a time. For instance, in corn judging, it is not wise to teach all the factors in a good ear at first, and then judge. Much better results will be gained by the teacher if he gives the pupils two ears, one of which has good kernels and the other poor, and then asks which has the better kernels. When they make their guess, the kernel factor may be studied until they know the difference between a good kernel and a poor one. Then they may test this out by ranking ears by kernels and by nothing else. Then when this has been mastered, two ears, one having a good tip, the other a poor one, may be given to the pupils; and they may be asked to select the better tip, with reasons for their choice. This will lead to an explanation of the characteristics of a good tip. Then they may grade a group of ears by tips alone.

In this way all the points of a good ear may be studied one by one, and after all are studied, the pupils may be put upon the problem of selecting good ears by the score card, including all the points.

In this way the data — or, rather, the facts that govern them — may be picked up one by one and used in testing until they are remembered, before giving other data. This method avoids the waste of pouring in a mass of facts before they are used or have a chance to be remembered.

Summary. In gathering facts they should be taught little by little, as the solution to little problems. In this way they will be remembered more exactly.

Intelligent Guessing. If pupils are allowed to work things out for themselves there is a gain both in interest

and in understanding. For instance, if the teacher says the characteristics of the tip of an ear of corn are such and such, the result is not nearly so beneficial as when he says, "Which of these two ears has the better tip?" The latter method is better because the pupils then begin to think. This thinking may lead them to work out the characteristics of a good tip for themselves, or, if not, when the characteristics of the tips are given, their minds will be active and ready to take hold of the facts.

Nothing has a more deadening effect upon interest than to have everything told to one. Even if the pupils spend much time in guessing intelligently, no time is lost, for what they get they get well. Whenever a boy is given an interesting task of his own, no matter what, and is allowed to put his own initiative into it, he may make mistakes, but he is gaining experience in the best school of experience in the world — the school of practical initiative. If a teacher does not tell too much and allows the children to get a few things for themselves, teaching will be full of fun for him and drudgery will fly away, for the strain of teaching comes from the daily lift of a burden of childish apathy. Give the pupil a chance to make intelligent guesses, and he will accept the chance to gain intelligent judgment.

Summary. To guess intelligently is the highest type of thinking, and should be utilized to the full extent.

Field Work. Methods of teaching agriculture lead inevitably to field work. Part of the teaching has to be done through trips to the farm where the material for instruction can be found in its natural setting. In the Storm and Davis reference at the end of the chapter many detailed suggestions will be found for observation work in connection with field crops, animal husbandry, dairying, poultry husbandry, and horticulture. By way of illustration a

few of those connected with field-crop work may be mentioned. Pupils should know the kind of weather when the pollen of corn is scattering and see that the silks of the corn are dry, or in condition to receive the pollen. They should observe the time of the germination of any field crop after the day of planting, and make memoranda of the moisture conditions of the soil at the time. They should also know how long after blossoming small corn requires for the maturity of the crop. They should observe how long a field of corn planted for roasting ears remains in marketable condition and how soon after blossoming an early crop of Irish potatoes may be harvested. These suggest to our minds the enormous number of farm questions upon which accurate data may be collected, and conversely show how futile is a course in agriculture which is confined entirely to a study of the book.

Drill. The same rules for drill apply here as have been described throughout the textbook. Whatever is drilled upon should first be clearly understood and then repeated attentively until it becomes automatic. In agriculture care must be taken to have all the work clearly understood and to have those things which the pupils will use when they grow up selected for drill. Particularly such items as tables of constituents of rations and the points in judging cereals and animals should be memorized thoroughly.

Illustrative Material. Large numbers of farm bulletins published by the Department of Agriculture at Washington, the various state agricultural colleges, and many commercial institutions should be collected and catalogued. A plan for cataloguing is given by Nolan in the reference cited at the end of the chapter.

When this has been accomplished, only a small portion of the illustrative material that is available has been collected. For instance, no recitation in agronomy should

be conducted without considerable illustrative material. If the lesson is one in connection with corn, there should be collected corn of all types, on the cob and in bottles. Corn products such as sugar, syrup, starch, breakfast foods, etc., stalks of corn, tassels, and silk should be used for illustration. Corn tillage implements should be available. Fertilizers and lime should be shown, together with samples of bad weeds.

The students should form the habit of collecting the illustrative material for use in the classes and then of assembling it for use in recitation.

To material of this sort may be added pictures, suitably mounted on tough bookcover paper, gray in color, and collected from various sources such as catalogues, agricultural journals, machinery companies, fertilizer companies, seed houses, and manufacturers. Local subjects may be photographed. These may sometimes be made into lantern slides. In more ambitious communities local films may be made or used when obtainable from the county agent or the state agricultural college or manufacturers of farm equipment.

Summary. To make the teaching of agriculture vivid, illustrative material should be drawn from every possible source, including farm products, bulletins, and pictures.

The School Laboratory. In the seventh and eighth grades some simple school laboratory exercises may be carried on. The object is to transfer to the schoolroom some of the study which cannot be so well carried on by observation on the farm. For instance, in the germination of seeds, it is possible through the use of soil and seeds in a common window-box for the children to watch from day to day, in great detail, the processes to which they may never have paid attention in the fields at home. Laboratory work can easily demand very expensive equip-

ment, but this is out of the question in the elementary school. Yet it is surprising how much work of this sort can be done with simple home-made equipment if the teacher is looking for opportunities.

Nature Study. Nolan gives a number of illustrative lessons to be used in the teaching of nature study. His problem in teaching the facts about the common objects of nature is to secure educative problems and set useful exercises. One such lesson is presented as an illustration of the type of questions and exercises that should be used. This is a lesson on the robin, and indicates what the children can be asked to do in order to increase their knowledge of and appreciation of this delightful member of the bird family.

Title: The Robin.

Object: To see and learn something of the habits and value of the robin.

Material: A robin in sight.

Subject-matter and Method:

1. Take the class out on the lawn, or in the orchard and sit down to watch and listen.
2. Learn to recognize the robin by its song as well as by its appearance.
3. Where does the robin love to be? Why? What have you seen the robin doing? When does it sing most? Where does it nest? Out of what does it build its nest? Who has seen a robin's nest? How many and what color are the eggs?
4. What does the robin eat? Is it our friend? Why? Could it be tamed? How? How can we help the robin in nesting, feeding, and drinking?
5. What are the robin's enemies? How can we protect it?
6. Read some poem about the robin.
7. Tell the legend of Robin Redbreast.

REFERENCES FOR CLASS READING

- ***BETTS.** *Class-Room Methods and Management*, pp. 318-34. (General.)
BRICKER. *The Teaching of Agriculture in High Schools*, pp. 122-65.
LEAKE. *Means and Methods of Agricultural Education*. (General.)

- ***NOLAN.** *The Teaching of Agriculture.* (A full outline for rural nature study in the grades. It contains several illustrative lessons.)
- ***STORM and DAVIS.** *How to Teach Agriculture.* (A text for vocational teachers of agriculture which is full of suggestions for the teachers of agriculture in the elementary school.)
- WILKINSON.** *Rural School Management*, pp. 376-91. (Boys' and girls' clubs.)

CLASS QUESTIONS

1. Why should agriculture be studied in rural schools?
2. Why should it be studied in city schools?
3. Name the five most important topics that could be studied in agriculture in your school community.
4. What bulletins do you think would be of use? (In answering this, write to the Department of Agriculture at Washington, D.C., asking for a list of their Farmers' Bulletins if you do not have them. Write also to your local agricultural college for a list of their bulletins.)
5. How much stress should be laid upon the fact that if the pupils study agriculture they can make more money?
6. Describe the workings of any agricultural club for school children of which you know. If you know of none, write to the same address as in question 4 above, and ask them for any literature they have upon the formation of agricultural clubs.
7. Name ten interesting poems dealing with farm topics and farm life.
8. Describe an old-fashioned husking bee or singing school. Are young people different to-day from their fathers and mothers? Could they be persuaded to come together for similar purposes? Why? If so, how?
9. How would you proceed in letting them work out these problems for themselves? At what points do you think assistance would need to be given in each?
10. Name five practical problems that could be solved more easily by visiting a field than in the classroom, without such a visit.

CHAPTER XV

SUMMARY OF METHODS

CONTRARY to the usual practice in textbooks of this sort we have deliberately left until the end a general statement of methods of teaching. It is much easier to understand a general method when it is applied to specific cases than it is to understand an abstract statement of the method without applications. Our plan has been to make the applications first in connection with the different subjects, and then give the methods together in systematic form as a summary and review.

The important part of this summarizing chapter is not the statement in the body of the chapter. The questions at the end which assist you in going over the preceding chapters and systematizing them are of more importance. The topical index at the end of the book will be found helpful in finding page references.

The Function of Teaching. The aim that the school as a social agency has in view has been stated in various ways. The particular statement underlying our discussions is this: The function of teaching is to assist pupils to appreciate and control the values of life. This means that the schools seek to help pupils to do what they want to do. If they want to learn to write the school should teach them how. If they wish to learn to read, they should be assisted to the control and mastery of reading. But in addition, the school has to teach them to appreciate what is worth doing. Children often do not want to do quite important

things and they have to be directed in this matter. So children should be assisted in school not only to do what they want to do, but also to want to do what is best for them to do.

The Function of Subject-Matter. The subjects taught in school, each in its own way, help the pupils to get control of values. Each has a different function to perform. For instance, spelling assists in the communication of ideas by presenting the order of letters in words. Writing also assists in communication, but its function differs from spelling in that it advises about the form of letters. Arithmetic gives control of those values in which number is used. In short, the intrinsic function of each subject is to assist pupils to control specifically different values.

Other functions of subject-matter are often given. We are told that study in school strengthens the memory, the imagination, and the reasoning powers. Moreover, some subjects are studied as a preparation for the pursuit of other subjects. For example, we study algebra to get ready for college mathematics. Then, some subjects are studied because ignorance of them will make people criticize us. If, for instance, we speak ungrammatically, educated people may make fun of us.

These reasons for the study of a subject in school are called the indirect functions or uses to which the studies are put. They are not the intrinsic functions for which the subjects were organized. That is, when arithmetic was begun by people ages ago, the arithmeticians did not say, "What we must find is some means for training the memory." Rather they said, "We want to find a means for handling number," but we found that when numbers were handled systematically and persistently the memory was strengthened, so we speak of such results of study as indirect.

There are three classes of indirect function. We speak

of the first as the training and discipline of the mind. The second is called a preparatory function, when we find that by studying one subject we get ready for studying another more advanced. The third is known as the decorative function, when a knowledge of a subject leads people to feel that we are well educated.

The important point to be made in connection with all this is that if we find no reason for studying any subject except these indirect results, it is better not to study it. We must pay attention to the intrinsic function, for each subject is a tool fitted for its own particular work, and this intrinsic and peculiar function we ought to keep in mind.

Summary. The intrinsic function of subject-matter is to assist pupils to understand and control things worth while. Each subject is fitted to perform a special bit of work. Certain indirect results come from the study of subjects, and these are classified as disciplinary, preparatory, and decorative.

The Structure of Subject-Matter. Whenever man makes anything he first of all has its function in mind. It has some purpose. Then in making it he tries to organize it in such a way that it will carry out its function most efficiently, and if he makes it well, every part will be related to this function. For instance, the watch is made in order to show correct time, and every wheel, pivot, or mark on the face has something to do with this function. Each has a reason for being there. So, therefore, everything that is made by man has both a function and a structure. The elements of the structure are all necessary for the carrying out of the function, if the thing is well constructed. This holds true for each subject taught in the curriculum. It has its main divisions and its subordinate divisions. History is divided into ancient, medieval, modern, English, and American divisions. American history may again be divided into the Colonial Period, the Revolutionary

Period, the Period of the Constitution, and so on. Moreover, each of these may again be divided and subdivided. Each item of history or of any other subject, down to the most minute detail, is included in it in order to carry out the main function or purpose which is set for the subject.

If any subject is well constructed it has one chief characteristic. It contains nothing that is irrelevant to the function. Since an outline is a statement of the main points in a structure, each point in the outline should be relevant to the subject and should bear upon the central topic or function.

Summary. Each unit of subject-matter is organized to carry out a function, and it is characteristic of the good structure that there be present in it nothing irrelevant.

Ideals. Ideals are qualities of personality and character which are made the objects of desire and effort. These ideals are of use in life as standards according to which we perform activities and solve problems and satisfy needs. The person who sets up accuracy as an ideal will try to do everything that he does in an accurate way. When he desires to be open-minded he will study the problems of history, geography, and civics in a way that is different from that of one who is prejudiced.

Ideals are of much more importance than information. If, for instance, we had to choose between making children honest and teaching them arithmetic there is no question in the mind of any thoughtful person that ability to be honest would be chosen in preference to a knowledge of multiplication. But fortunately, no such choice needs to be made. We can teach ideals and give information at the same time. Moreover, we can teach the ideals through the subjects. It is possible to set up the ideals of accuracy, neatness, and speed in connection with the teaching of handwriting, for instance.

The schools have not given the teaching of ideals the place that the subject should occupy in the classroom. We have been inclined to allow them to take care of themselves or to teach them quite incidentally, and we all know that, as some one has said, "Incidental teaching is accidental teaching."

In connection with each of the subjects we have in this book set up a few ideals which are particularly important. The lists are not complete. They are merely suggestive. If, when a child finished school, he had no ideals except the total number of those mentioned in the chapter, he would be lacking in some very important ones. But if the reader will make a list of those that are mentioned he will find that we have covered a rather wide range and all that is necessary to do is to see that in school discipline and organization and in the life of children outside of school the other fundamental ideals are emphasized. Unfortunately no such list has ever been scientifically prepared, so the teacher is left to his own initiative in selecting the supplementary ideals which he believes to be of importance.

The Teacher's Objectives. In connection with every subject it is necessary for the teacher to decide just what he expects the children to have gotten out of the subject when it is completed. This needs to be done in considerable detail for each grade if the teacher is to be able to work efficiently. It is not enough to say that so many pages of the book will be covered, for after all we teach books only as a means for educating the children, and we need to think, not of what is in the book, but of what children are supposed to get out of the study of the subject.

The objectives which to me appear to be important are listed in connection with each subject and in many cases the details of the objectives which could not be included for lack of space are found in the references cited at the end of each chapter.

The Course of Study. It is impossible to teach children all that has been discovered in each subject. Moreover, the graduates of the elementary school would have no use for all of it. They cannot understand it all nor do they have time to learn it all.

We have, therefore, to make a selection of what we wish to teach. This selection is a very hard task and is a problem upon which there is great difference of opinion. Some people will include drawing, music, and the industrial arts in the course of study, while others may decline to admit the need of them. Some people believe that ancient history should be taught while others scorn the subject.

In spite of the fact that we may differ in the details of selection the principle by which to select is very easily stated. It is this: Pick out the subjects that are most important for the children in the community in which they live and teach them what they need of these from day to day. There may be differences of opinion about what is most important and what is not. We are, however, making great strides toward this ideal in several of the subjects. Particularly in spelling, investigators have given us a spelling list concerning which there can be only slight differences of opinion, and what has been done in spelling can be done equally well for some other formal subjects and reasonably well for all of the subjects.

In the mean time, we have to place our chief reliance upon the progressive textbook, where the authors use the latest scientific information that is available, but the decisions of the author must be passed upon by the teacher in the light of his own experience with children and with different communities. The inexperienced teacher naturally has to rely largely upon the textbook and the opinions of those teachers under whom he has received his pedagogical train-

ing. So, at the present time, the thoughtful teacher and the scientifically trained writer of texts must each decide upon what he thinks are the most important things for the children to study.

When the subject-matter has thus been selected upon the basis of importance, the material has to be arranged according to the level of interest and abilities of the children. For instance, young children cannot study exactly the same subject-matter that high school students study. The children differ from grade to grade. Therefore, after we have decided upon what should be taught it is necessary to apportion it among the grades according to the interest and abilities of the children in each grade. Unfortunately, this has not been done with any great degree of success as yet, with the result that we find that many things are supposed to be taught to children at a time when even the best teachers cannot get them interested in them.

The young teacher has, of course, to follow the course of study and the textbook rather closely because as yet he does not know children very well. But he should train himself to watch for lack of interest and decide whether it is due to poor teaching, to the fault of the individual pupil, or to the selection of topics that cannot be made interesting. In the last case such topics should be omitted.

Summary. In making a course of study the most important subjects for pupils should be selected, and these should be apportioned to the different grades according to the needs and abilities of the pupils.

Diagnosis. During the past ten years we have begun to elaborate a technique for the diagnosis of difficulties. Formerly teachers of education placed reliance upon general methods of instruction, but now we realize that it is impossible at present, if ever, to develop a system of general methods which will be completely successful in teaching.

Rather, we have turned to the point of view that in teaching we need to find out what are the difficulties that the children encounter and correct these one by one. If you will recall the discussion of this question in the chapter on spelling, it is clear that we can find out two types of things. First, we can discover what are the most difficult words to spell, as well as the peculiar difficulties children have in learning to spell. There are, thus, two types of difficulty which need to be known — first the difficulties of subject-matter, and second the difficulties of the children in its mastery. As an illustration of the first type of difficulty in spelling we have the Hundred Spelling Demons, while as an illustration of the second we have the analysis of reasons for children not spelling correctly.

This method of diagnosis, which has been worked out to a less complete degree in arithmetic and silent reading, is capable of extension to all the subjects of the curriculum, and eventually we hope to be able to put before the beginning teacher such an analysis for all subjects. But in the mean time the teacher can study his own pupils and discover in a more or less complete way the difficulties which he must use as a basis for correction. Every teacher must be a diagnostician and must adopt the scientific attitude in the study of his pupils and the technique of teaching.

Interest. The human mind is so organized that it works best and most successfully upon those things in which it is interested. Interest is the channel through which energy flows, and if there is no interest in a subject, no energy will be directed toward it.

The school labors under unusually hard conditions. When the children enter they have no interests which are connected with the work in school. They may not like arithmetic or geography or history and when they do not

like them it means that these subjects are not tied up in any way with the system of interests according to which their little lives are directed. Therefore the problem of interest is a vital one for the teacher. Society has decided that the subjects which are taught in school are more or less necessary as a preparation for living. The children are not greatly interested in preparation for living; they live in the present, and it thus becomes the duty of the teacher by some means to connect these socially important subjects with the children's present system of interests.

Immediate Interest. Fortunately, we find that in some cases children have a natural liking for certain subjects. As soon as they begin to study them the interest appears and, under proper conditions, it may be sustained to the end. When children are interested in this way we say that the interest is immediate, and by this we mean that children like the subject merely because they like it.

Mediate Interest. Fortunately for us, it is possible to develop interest in a subject which is not immediately interesting. Children can be made to widen their interests. When we have an interest in something, not for its own sake but because it is useful in carrying out something which is of immediate interest, we say that the interest is mediate, that is, it is a mediate or second-level interest. Mediate interest can be developed in several ways. The general principle may easily be stated as follows: Mediate interest can be developed in an object by connecting it with an immediate interest. The different types of connection are the following. In the first place, we have a great mass of general social interests. The children like to please their parents, to secure the approbation of the teacher, to stand well in their classes, and to work together in groups. In line with this, children frequently develop

an interest in a subject like arithmetic, which has no immediate interest, by recourse to the desire for good grades to please the parent and the teacher, by the fact that all their friends like the subject, by putting them on projects, etc. In the second place, children dislike personal discomfort. They do not like to receive corporal punishment, to stay in after school, or to be demoted. So it is possible, in line with this fact, to use these incentives to develop an interest in such a subject as history, for instance. In the third place, emotion has a great deal to do with developing an interest in a subject. If the teacher has the enthusiasm which is highly infectious or has the magnetic personality which holds children to him, and if he is deeply in love with school learning, he is able to lead the children to like the school. When the children have the confidence in him which is born of these qualities of leadership, the mere fact that he believes the subjects are worth while clothes them with an importance which they would not otherwise possess.

All these methods are said to be generic, because they apply equally well to all subjects. These generic values or incentives constitute a great group of factors in developing interest. Some of them are less valuable than others, and produce comparatively worthless forms of interest. Specifically, we cannot regard highly that interest in arithmetic which arises from the fear of corporal punishment, even though the mediate interest so developed may be sufficient to lead the child to become somewhat proficient in arithmetic. Yet, on the other hand, others of these incentives are permanent and fundamental. We cannot get away from the fact that human beings, both as children and adults, are deeply concerned with the approbation of their associates and are strongly influenced by the attitude of other people. Such being the case, there is every reason

why these principles should be used as a method of stimulating interest in whatever the person does.

Intrinsic Functions. In addition to these methods of developing mediate interest, there is another which is the most valuable and which is an outgrowth of the intrinsic function of subject-matter. Stated briefly it is as follows: An uninteresting object becomes interesting when it is of use in doing something which is interesting. This means that we can develop a great amount of interest through the intrinsic function of subjects and parts of subjects. For instance, interest in arithmetic may be developed by tying it up with other interesting activities in which it becomes necessary to handle numbers. We find children in the lower grades learning a great deal of arithmetic rapidly and efficiently by the playing of games which involve number. When children are playing a game in which they become deeply interested, and it becomes necessary to count and add in order that the game may proceed with speed they will naturally perform the necessary arithmetical operations. I have seen little children whose scores in a tossing game were placed upon the board dance up and down with excitement as some child totaled the columns to see who had won. Thousands of such uses of arithmetic occur in school. Similarly, an interest in legibility in handwriting may be developed through the desire of the children to communicate certain ideas, which are very important to them, to other people in writing. And likewise an interest in agriculture can be developed if the boy wishes to grow as good a vegetable garden as possible in order to make money or help his mother.

In using the intrinsic and peculiar function of subjects as leads in discovering connections with interesting things, all that is necessary is for the teacher to ask himself, "In connection with what things the children like to do is this

subject useful?" and then with alertness and resourcefulness discover such situations and place the children in them.

Summary. While generic incentives are of great value, the intelligent and efficient teacher will place his greatest reliance upon connections of subjects and parts of subjects with interesting situations through the intrinsic function of the subject.

Difficulties and Problems. In following out this line of thought, we naturally arrive at problems and difficulties. The mind of children and adults spends most of its time upon the solution of problems and the removal of difficulties. Problems arise in this way. A child starts to do something that he is interested in and finds that he cannot do it. Then the problem naturally arises of how to do this thing because he is essentially interested in doing it. Problems thus arise when difficulties are encountered, but in school these problems may be of two sorts. They may be connected with something in which the child is interested or they may not. The problem of how to keep the hands clean is quite important to one who is interested in hygiene or social approval, but if the boy is interested in neither, it will not be a real problem to him. It will be a problem to his teacher and his mother. Consequently, if we wish to have children work upon problems we must be sure that they are connected with something which is of interest.

When, however, the problem is interesting, the process of reasoning enters, and when the process of reasoning enters we have reached a very significant point in education, for one of the chief objectives of the school is to teach children to reason well in whatever they do.

Reasoning consists of five steps. In the first place, the child must feel a need, which is not very clearly defined. In the second, he proceeds to define this need and put it in

the form of a problem. Third, he thinks of different ways of solving the problem. Fourth, he thinks these ways through until he finds a solution that seems to be satisfactory, and fifth, he verifies this solution to see if it works. For instance, the children may want to do something for Thanksgiving, but they do not know exactly what. Then they decide that they will give a Thanksgiving program and the problem becomes that of deciding what this program shall be. Many suggestions are made, and these are talked over with the result that the program is finally decided upon. Then the program is given, and if it is successful with the audience they are satisfied with the solution they got.

In some cases these steps are not all present. For instance, the teacher may assign certain problems in arithmetic and the children may be interested in working out a solution. In this case, we start with the second step — the defined problem. Then the children study this problem and think of different ways of doing it. They discuss or think over the possibility of using the one solution or the other and finally work the problem through. Then they check the problem to see if it is correct.

These five steps may be summarized as (1) the felt need; (2) the defined problem; (3) suggestions for solution; (4) elaboration of these suggestions; (5) verification.

Induction. In certain cases the problem may be that of finding general principles. For instance, we may wish to discover a rule in grammar or in arithmetic. In either of these cases the teacher may state the rule, but it can be made a problem for the children in which they discover their own rule for themselves. Illustrations of this may be found in the chapter on grammar. Here the problem steps are modified as follows. In framing the rule they must first study some of the cases, then they must com-

pare these to see the respects in which they are alike, and third they may form the general rule. A particular case of this is found in the Herbartian Five Formal Steps. These steps are called: preparation, presentation, comparison, generalization, and application. In the first step — preparation — the problem to be solved is stated. In the second — presentation — the particular cases are presented and studied; in the third — comparison — these particular cases are compared; in the fourth — generalization — the rule, principle, definition or law is stated, and in the fifth — application — the generalization is drilled upon and used in solving other problems. It will be noticed that in the second, third, and fourth steps we have the three steps involved in induction. The Five Formal Steps are useful whenever the problem is that of forming rules or making definitions.

Deduction. The problem may take still another form. There are times when we can solve a problem by using rules which we already know. For instance, I wonder whether or not the low standing of a pupil is due to defective eyesight. I already know the general principle that if boys' eyes are good they can read letters of a certain size at twenty feet. I find that this boy cannot do so, therefore I decide that his eyes are bad. Here I have used a general rule to handle a particular case.

In induction we have seen that we examine particular cases in order to find a general rule. That is how the rule about reading letters at a certain distance was worked out; many eyes were tested and the results compared. But in deduction, in the illustration above, I already have a rule, and I apply it to the case of the particular boy whom I had not examined before. Deduction involves three steps: First I know many general rules; second, I am confronted with a particular case, and third, I try to find the rule that

will fit the case or try to find a particular case that will fit the rule.

Deduction is used in every subject. It will be remembered that it was developed in the chapter on geography. In arithmetic little time is taken in learning rules and processes, but most of the pupils' time is spent in solving problems by the application of known rules. In grammar the learning of definitions is a matter of induction, for all parsing and analysis involves the use of definitions or rules in handling particular cases. In drawing, history, reading, and music deduction is also frequently used.

Summary. In problem solving there are five steps. First, a felt need; second, a defined problem; third, suggestions for solution; fourth, elaboration of suggestions; fifth, verification. Two special forms of problem solving occur. In induction the problem is that of discovering a rule, and the steps are (1) the study of particular cases; (2) their comparison; (3) generalization and (4) verification of the generalization. The special form of induction is known as the Herbartian Five Formal Steps. They are (1) preparation (2) presentation (3) comparison (4) generalization (5) application. In deduction the problem takes another form. Here we wish to apply generalizations already known. The factors are (1) general principles (2) particular cases (3) deduction.

Projects. The problem assumes another form in the project. When a problem is rather large, and is carried on in its natural setting, we call it a project. By natural setting we mean a setting which is found outside of school or is not modified greatly by being introduced into school. We thus have home projects and school projects. When we are looking for projects we ask ourselves the question: "What are some of the things which children naturally do or are expected to do outside of school and in school which involve a good deal of thinking, and which are not too difficult for them to carry out nor yet so simple as to destroy interest?" Many examples of these are found throughout the text.

Children are not always interested in projects but when they are the interest is likely to be very deep because they have a chance to think, and they are working upon things which are very much worth while for many reasons other than the desire to do well in school.

Not all material in school, however, can be taught by the project method. It is not practical for the teacher to organize the curriculum completely upon a project basis. There are times when it is necessary to give drill upon information which is going to be primarily valuable, but which the children cannot completely memorize in carrying out projects, and it is quite important, in the upper grades especially, that the systematic study of a subject should be given. For instance, it is difficult to teach grammar entirely by the project method. If we use this method in teaching grammar we should begin with the children's mistakes in speech and teach them grammar to explain why the correct forms are correct. For instance, we might use the project method by having the children correct the mistake of "He don't" for "He doesn't." This involves the rule that the verb must agree with its subject in person and number, but in order to understand this rule the children must know verbs, nouns, pronouns, subject and predicate, and person and number in nouns and verbs. In such a case it becomes absolutely necessary to teach grammar systematically by beginning with definitions and developing rules. Then when these have been learned systematically the project method may begin.

Yet the project is of such great importance because it develops interest and uses reason and thinking, that it should be used as much as possible by teachers.

Tests. If teaching is to be efficient the results of teaching must be tested. Tests have two values — the teacher

may use them to see how successful the work of the children has been, or to find out where more work needs to be done. They have an evaluation function and a diagnostic function.

During the past ten years rapid strides have been made in the developing of standard tests, and the technique developed in the standard tests can also be used by teachers in what we have called "home-made" tests. These tests are worked out more fully in some subjects than in others, as indicated from chapter to chapter. The resourceful teacher will make as complete use as possible of scientifically and carefully prepared tests to supplement the conventional testing to which he has become accustomed in his own school life.

Telling vs. Development. The teacher may either tell the children everything or help them to think it out for themselves. When the children think things out for themselves we say that the subject is developed rather than told. Developing a subject is of great help to children because they understand it better when they learn it and retain it more exactly and permanently. The development method should be used wherever advisable, but it is not advisable to use it where the thing to be learned is too difficult to understand. In that case, if the pupils need to use it, but cannot understand how it is arrived at, it should be told to them. For instance, if it is necessary to teach square root to an eighth-grade class, it is wise to show them how to work square root without explanation, since the theory is too difficult for them to understand.

Questioning. The most important tool used in the development method is the question. To question well is a high achievement of the teacher. There are two types of question — the test question and the developing question. The purpose of the former is to find out how much children

know while the purpose of the latter is to help them to do their own thinking.

Test questions should lead to topical answers. In testing pupils the teacher should usually not ask a large number of little questions, but a smaller number of questions requiring more extensive answers. They should not exercise memory but should make the children think. In the questions at the end of each chapter, I have used very few purely memory questions but have tried to ask questions which will show whether or not the students understood the content of the chapter, while at the same time making them apply their knowledge in a new way. These are known as "thought questions."

In using developing questions the teacher gives hints to help the children. Illustrations of these may be found scattered through the text.

A few devices are of use in asking questions of the class. It is better not to ask questions in rotation because children will then know when their turn will come and will loaf in the mean time. It is better to say, "What is a noun — John?" than, "John, what is a noun?" for in the latter case the rest of the class are apt to leave the question to John to answer. Questions beginning with "What about" are poor. Generally speaking, questions answered by "yes" or "no" are not good because the answer is usually given away in the question. Leading questions from which the pupil may guess the answer are ineffective. For instance, the question, "Washington was the first president of the United States, was he not?" is poor. It is better to say, "Who was the first president of the United States?"

Answers. Children should not be allowed to answer in concert, because the teacher cannot tell who is thinking or who is inattentive. Occasionally in drill work they may be allowed to answer in chorus, but only occasionally.

Answers that are complete sentences should not always be insisted upon because they retard class progress and are not necessary. When the pupil's answer is obscure he may be asked to repeat, giving a full sentence, but usually an incomplete sentence is satisfactory. The teacher should be careful not to repeat the pupil's answers. This grows into a bad habit with some teachers. If the class cannot hear the pupil's answer, he should be asked to repeat it and speak more distinctly. Correct English should be insisted upon in all answers where language points have been covered up to that point by the class.

Drill. When anything has to be used frequently it pays to memorize or habituate it so well that it will not be necessary to think about it whenever we want to use it. This can be done by drill. We have mentioned the steps in drill many times, but it will do no harm to summarize them here. The first thing that is necessary is to understand the item that is to be drilled upon. Psychology says that there must be a clear initial impression. The second thing that must be done is to have attentive repetition. It is not sufficient to repeat. When the repetition occurs the attention should be fixed firmly upon it. It pays, moreover, to repeat it for a short time at frequent intervals rather than for a long time, but infrequently, because the attention tires easily. The third thing is to see that the item drilled upon is repeated until it becomes automatic. If one ceases the repetition before it reaches the point where one does not have to think about it, the labor is largely wasted. Fourth, the drill should be pleasant. It is almost impossible to form a habit if pleasure is not present, while it is relatively easy to form the habit if the person forming it enjoys the process.

Socialization. One of the most interesting topics that has been developed during the past ten years is the socialized

recitation. In my first edition I had trouble in finding many illustrations of the use of this method, but since that time the literature has become quite extensive. The point that is being sought after in work upon the socialized recitation is this — study is both an individual and a social matter. In the last analysis each child should be held responsible for a certain minimum number of facts, but in learning these it often happens that the children can learn more quickly and more effectively if they work in groups, particularly upon problems and projects. But even more important than this is the idea that the socialized recitation gives the children practice in working in groups, which is of use to them all through their lives. They have to work with people rather than work alone if they are going to be effective, and so it becomes the business of the school to teach them how to work together rather than alone. This practice can be efficiently given through group work. Sometimes the organization of group work is very elaborate and in some schools it is quite natural and simple. Perhaps the best guiding principle is this: The teacher should endeavor to teach the children the ideals of service and the technique of teamwork.

Methods of Study. In rural schools, particularly, the pupils spend, necessarily, a great deal more time on study outside of the class than in the class. They receive less assistance from the teacher and must in consequence do more independent work for themselves. This, in many respects, is an advantage, but unless the children learn how to study there is a frightful waste of time. Learning to study can be taught only in class, because the teacher is busy with other classes and has little time for supervised study.

In teaching the children how to study, care must be taken to set the right sort of assignment. The most diffi-

cult kind of assignment for pupils is the one most frequently used: Take the next four pages. This is the hardest because the children have to find out not only what problems the text is attempting to solve but in addition what the solution is. And to many children who are given this sort of assignment the idea never occurs that the text is solving any problems. They merely memorize a mass of facts.

This situation can be improved by the teacher if, in such subjects as literature, history, or geography, a few questions (informational and thought), the answers to which may be found in the assigned lessons, are placed on the board. Sometimes such questions may be set so that the pupils will have to consult two or three textbooks in the library in order to form their answers. When assignments are made in more than one text rather definite page references in each case should be given, even though it is surprising how much pupils who are trained to do it can pick out of a number of books without much assistance.

It is necessary in teaching children to study to diagnose each student's difficulties. Sometimes the chief difficulty is lack of mental ability, but most frequently the difficulties are more specific. They may lack confidence in themselves, they may not know how to memorize. They may not be able to pick out the important points to be learned in the text. They may not be able to read well. Every pupil who has trouble in studying his assignments should be diagnosed by the teacher to find out exactly what is wrong in order that the difficulties may be removed.

Study lessons should be assigned so as to require a minimum of written work by the pupil. Nothing is more deadening than assignments which require constant writing. Outlines of lessons may be written, but greater detail should be required only where there is a very good and sufficient reason for it.

In making difficult assignments it will often pay the teacher to take part of the time of recitation to talk over the lesson with the pupils and make the assignment clear, for while this takes some time from the short recitation, it must be remembered that the pupils are preparing for a long period of study to be used to the best advantage.

Appreciation. In the foregoing pages of this chapter we have been considering methods by which the children may become more productive in their work. But life consists not only of work but of enjoyment of the work of ourselves and other people. This is known as appreciation. By appreciating our own work we mean stopping to enjoy what we have done. This is the fundamental reward that we get from effort. We work for a while and our payment is the pleasure that comes from the contemplation of results. It is very important, therefore, that appreciation of work accomplished should be deep. This is obtained partly from the teacher through sincere, though sometimes exaggerated praise, and sometimes from the feeling of self-satisfaction. The Puritans have handed down to us the tradition that we should never be satisfied with ourselves, but a more rational view of life leads us to the position that it is not a weakness to praise ourselves to ourselves, and to seek for happiness in the things that we do. Possibly people who praise themselves too much may become conceited, but that can be easily taken care of by teaching children that courtesy and good manners demand that we should not talk about ourselves too much. This is a quite different thing from healthy enjoyment of what we are able to accomplish.

In addition to this we can appreciate the work of other people and, particularly in school work, learn to appreciate music, literature, and art. For, as has been pointed out again and again, while one pupil may be able to produce

good literature, music, or other forms of art, a thousand pupils can appreciate what others have produced.

In the developing of this fundamental attitude of appreciation several methods have been outlined throughout the text. These may be summarized as follows: (1) Children should be made acquainted with beautiful examples of music, literature, painting, and sculpture. They absorb a good deal from its silent contemplation. (2) The teacher may, through suggestion, lead the children to notice and cultivate the beautiful while they develop a distaste for the ugly and cheap. (3) Problems may be set which require the pupils to discriminate between the good and bad in order to solve them. (4) Discussions of reasons for liking and disliking pictures, poems, and music, lead the children to a deeper appreciation of the beautiful and (5) some slight training to write poetry, sing, play, and draw, helps to develop a deeper understanding of the beauty of the works which other people have created for our pleasure and improvement.

CLASS QUESTIONS

1. Make a condensed list of the intrinsic function of each subject discussed in the fourteen preceding chapters.
2. Make a list of the ideals mentioned in each chapter and rank them in order of frequency of mention. What other ideals should be developed in a well-rounded student?
3. Make a condensed list of the teaching objectives in each subject. Which stands out as the most frequently mentioned?
4. Glance through the course of study sections of each chapter. Summarize in a paper what you gain from the material. Criticize and evaluate what is said in the text.
5. Report upon diagnosis in relation to each subject. Which subjects are but sketchily treated in the text? Why was not more written?
6. Make a detailed list of all types of interest and the examples used in the text. Can you add others?
7. Discuss and evaluate generic interests.
8. Write a paper for beginning teachers on difficulties as a basis for teaching and give in the paper as many specific examples as you can.

9. Illustrate how the following types of reasoning are used in each subject:
 1. Problem solving
 2. Induction
 3. Deduction
 4. Project working
10. Write a paper on the use of the technique of standard tests in "homemade" tests.
11. Mention five eighth-grade topics which should be told rather than developed.
12. Write a paper on drill, showing where and how it should be used in each subject.
13. Devise methods of socializing recitations in each subject.
14. Show in detail how some form of appreciation can be developed in connection with each subject.

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